SUNGROW
Clean power for all

User Manual

Data Logger

Logger4000

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About This Manual

The manual mainly contains the product information, as well as guidelines for installation, operation and maintenance. Readers can get additional information at **www.sungrowpower.com** or on the webpage of the respective component manufacturer.

Validity

This manual is valid for the following models:

- Logger4000

Target Group

This manual is intended for qualified technicians who are responsible for installation, operation, and maintenance of the product, and users who need to check inverter parameters.

The product must only be installed by qualified technicians. The qualified technical technician must:

- Have electronic, electrical wiring, and mechanical expertise, and be familiar with electrical and mechanical schematics.
- Have received professional training related to the installation and commissioning of electrical equipment.
- Be able to respond quickly and effectively to dangers or emergencies that may occur during installation and commissioning.
- Be familiar with local standards and relevant safety regulations of electrical systems.
- Read this manual thoroughly and understand the safety instructions related to operations.

How to Use This Manual

Read through this manual carefully before using the product, and keep it properly in an easy-to-reach place.

The information in this manual is subject to ongoing updates and revisions. Although efforts have been made to ensure accuracy, there might be slight variations or errors compared to the actual product. Please refer to the actual product purchased, and the latest manual can be obtained from **support.sungrowpower.com** or sales channels.

Symbols

This manual contains important safety instructions, which are highlighted with the following symbols, to ensure personal and property safety during usage, or to help optimize the product performance in an efficient way.

Symbols used in this manual are listed below. Please review carefully for better use of this manual.

⚠ DANGER

Indicates high-risk potential hazards that, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates moderate-risk potential hazards that, if not avoided, may lead to death or serious injury.

⚠ CAUTION

Indicates a slightly hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Indicates potential risks that, if not avoided, may lead to device malfunction or financial losses.

"NOTE" indicates additional information, important content, or helpful tips that may solve problems or save time.

Contents

1 Safety Instructions

When installing, commissioning, operating, and maintaining the product, strictly observe relevant safety instructions. Improper use or misoperation may result in:

- Injury or death to the operator or a third party.
- Damage to the product or the property of the operator or a third party.

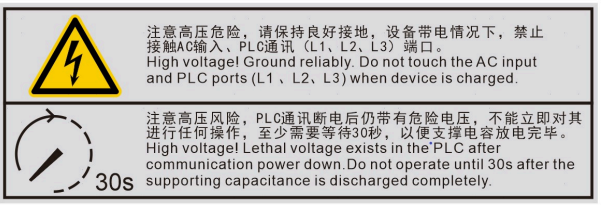
- The safety instructions in this manual are only supplements and cannot cover all the precautions that should be followed. Perform operations considering actual on-site conditions.
- SUNGROW shall not be held liable for any damage caused by violation of general safe operation requirements, safety standards, and the safety instructions specified in this manual.
- When installing, operating, and maintaining the device, comply with local laws and regulations. The safety precautions in this manual are only supplements to local laws and regulations.

WARNING

Only professional electricians or qualified personnel can operate and wire the product.

Warning Label

Warning label on enclosure of the Data Logger is as follows:



Symbol	Explanation
	High voltage inside. Risk of electrical shock hazard when it is touched.
	This symbol indicates a protective ground terminal which needs to be firmly grounded to ensure the safety of operators.

Symbol	Explanation
	Do not to touch energized components within 30 seconds after disconnecting the power.

Before Installation

NOTICE

After receiving the product, please check if there is damage caused during transport. Contact SUNGROW or the forwarding company once any problem is found.

The related operators must be familiar with the safety instructions in this manual and other safety regulations about the installation, operation and maintenance of the product.

Follow the instructions in the manual to perform handling, installation, and operation maintenance to ensure the safe and proper use of the product.

During Installation

NOTICE

This product can only be used for purposes specified in this manual. Unauthorized alternations or use of parts and components not sold or recommended by SUNGROW may result in fires, electric shocks, and other hazards.

NOTICE

Disconnect all electrical connection and the upstream input switch before installation, and ensure the device is voltage-free.

NOTICE

Disconnect all electrical connections and the upstream input switch and make sure the device is voltage-free.

Maintenance and Replacement

⚠ WARNING

Repair of the device can only be performed by the service department of SUNGROW or professionally qualified personnel.

Users are forbidden from performing repair and maintenance or replacing modules by themselves. Otherwise, it may cause severe personal injuries or property damages.

NOTICE

Never replace the internal components of the device without authorization. SUNGROW shall not be held liable for any possible damage caused by ignorance of this warning.

2 Product Description

2.1 Function Description

The Data Logger is equipped with the following functions:

Support of Device Connection

The Data Logger can be connected to devices in the PV system via an RS485 bus, and it can be also connected to SUNGROW string inverter equipped with the PLC communication function through the PLC cable. The Data Logger can store and process device information as well as convert data communication protocol.

Management of Communication Device

The Data Logger can centrally manage devices connected to it, including parameter setting, firmware upgrade, etc, which makes onsite maintenance more convenient.

Configuration through Web Interface

Users can set system time, network, serial port, etc. and maintain the protocol point table through the embedded Web interface of the Data Logger.

Network Port Configuration

There are five Ethernet ports (namely, ETH1 to ETH5) with the data exchange function on the Data Logger, three Ethernet ports, and two fast scheduling ports. It can be connected to SCADA or insight northward and to third-party devices southward.

Data Forwarding Service

The Data Logger can forward the collected data to SCADA, Insight and iSolarCloud.

Protocol Conversion Service

The Data Logger provides protocol conversion service, including converting Modbus RTU to IEC104, MQTT, ModbusTCP, etc.

Grid Dispatching Function

The Data Logger can accept and execute dispatching instructions from the grid, including remote dispatching control instructions, and analog and digital dispatching control instructions.

The Data Logger can perform active power control and reactive power regulation on the inverter connected to it.

Local Power Control

The Data Logger can receive and perform local dispatching instructions, including delivering fixed value, energy meter closed-loop dispatching, etc.

Fast Dispatch

The Data Logger can accept and execute fast active and reactive dispatching instructions, including remote Goose instructions, to achieve reactive power control within 30ms.

IV Curve Online Diagnosis

The Data Logger can perform I-V curve scanning on inverters developed by SUNGROW, and users can view scanning result via iSolarCloud, Insight or iSolarSuite. For detailed description of the I-V curve scanning, refer to the manual of iSolarCloud, Insight or iSolarSuite.

Built-in MPLC

The Data Logger has a built-in MPLC-H (Broadband Power Line Carrier Communication), which can be directly connected to the string inverter with MPLC function produced by SUNGROW.

2.2 Networking Application

The Data Logger can be applied to various networking scenarios. It can be connected to the inverter, transformer, Meteo Station, and energy meter in the PV system via RS485 bus, or connected to SUNGROW string inverter equipped with MPLC communication function through MPLC bus.

- The Data Logger can transmit the collected device data to the background plant controller, such as Insight and SCADA, through the core switch.
- The Data Logger can also transmit the collected device data directly to iSolarCloud through the 4G router.

Connected to background plant controller through a core switch

The following figures shows how the Data Logger is connected to the Insight or SCADA through a core switch.

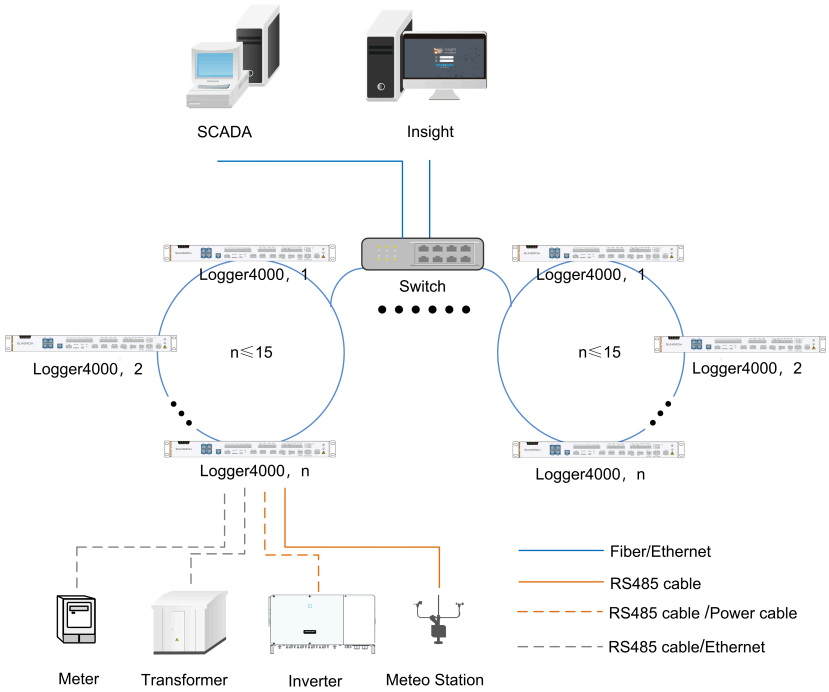


figure 2-1 Ring networking

When the ring networking is used, a maximum of 15 Data Loggers can be connected to a ring network.

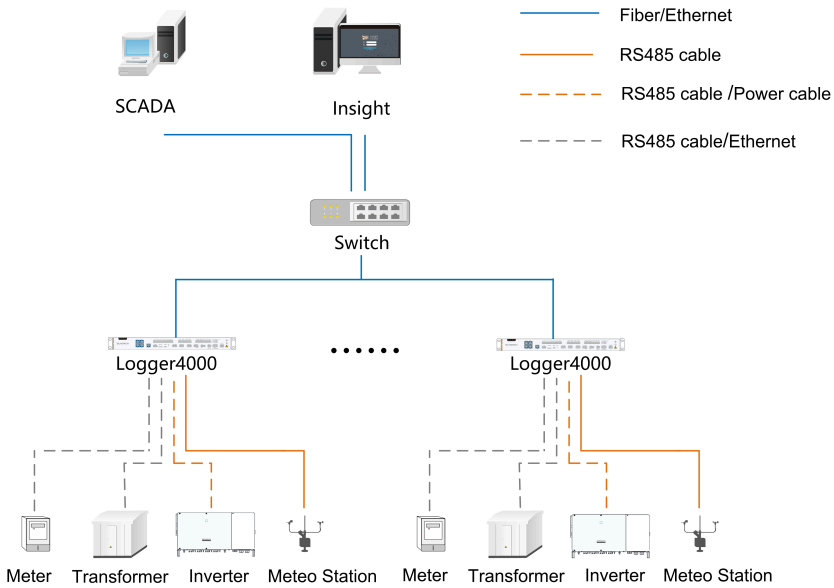
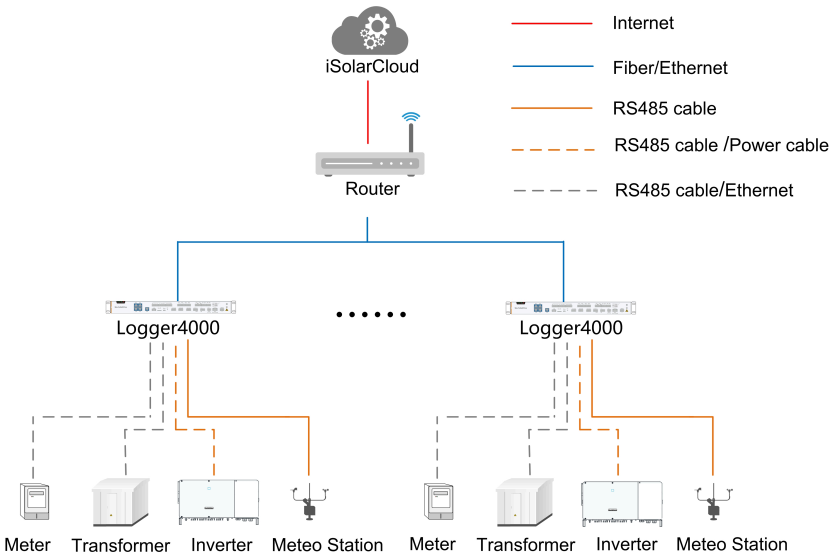


figure 2-2 Star networking

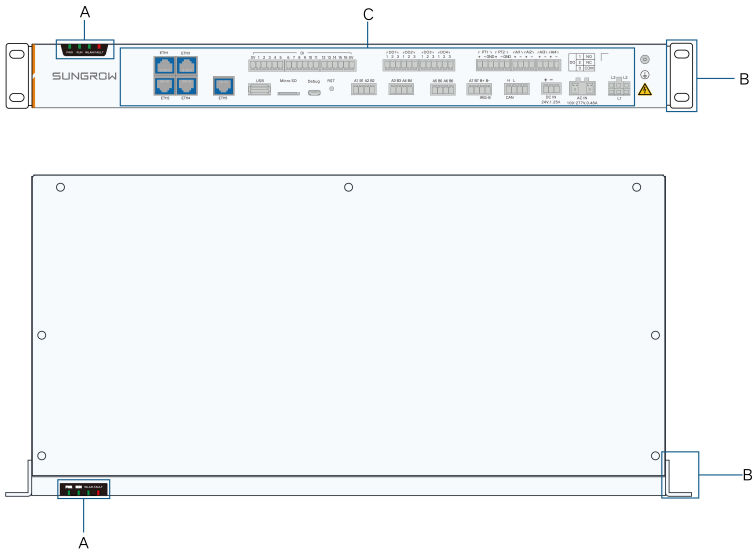
Connected to iSolarCloud through a Router

As shown in the figure below, the Data Logger can be directly connected to the iSolarCloud through a router.



2.3 Product Introduction

Appearance



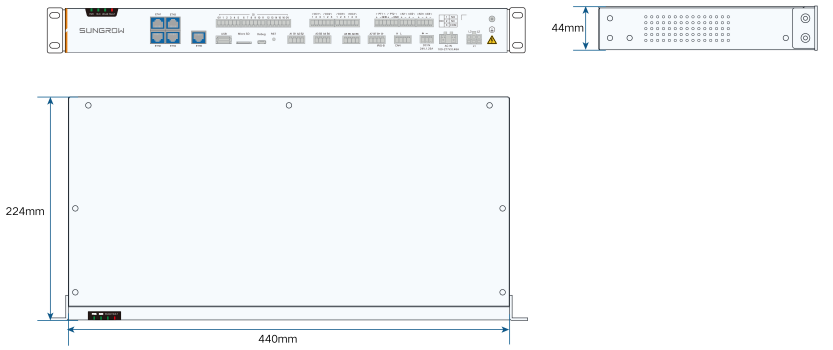
Item	Description
A	Indicators
B	Mounting ear
C	Wiring area

Indicators

Indicators	Name	Optimizer status	Status Description
PWR	Power indicator	Steady on (Red)	Normal power supply
		Off	Abnormal power supply
RUN	Running indicator	Blinking	Running normally
		Off/On	Abnormal operation
WLAN	WLAN indicator	Off	No WLAN function
FAULT	Fault indicator	Steady on (Red)	There is an alarm or fault in the connected inverter.

Indicators	Name	Optimizer status	Status Description
		Off	The connected inverter is free from faults.

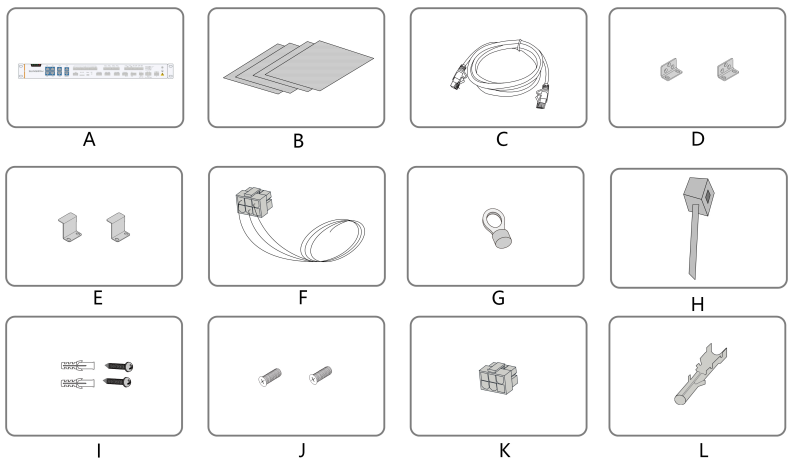
Dimensions



3 Unpacking and Storage

3.1 Scope of Delivery

The following items should be included.

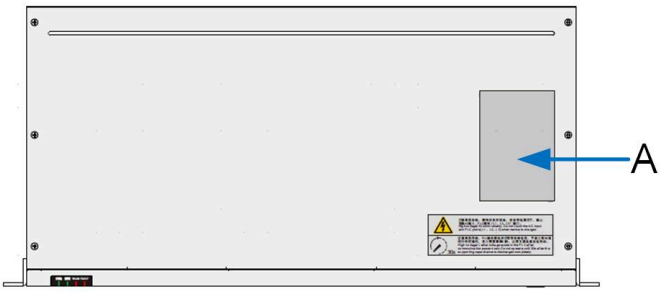


Item	Name	Description
A	Data Logger	-
B	Documents	Quick Installation Guide, quality certificate, packing list, product test report, and warranty card
C	Ethernet cable	1
D	Mounting ear	2
E	Bottom supporter	2
F	PLC cable	-
G	OT terminal	2
H	Nylon cable tie	10
I	Self-tapping screw assembly	8 sets, including ST4.8x19 expansion bolts and self-tapping screws, used for wall mounted installation
J	Fastener assembly	6 sets, M4x8 cross recessed countersunk head screws, used to anchor the mounting ears to the Data Logger
K	Socket	1

Item	Name	Description
L	Pin	6

3.2 Identifying the Data Logger

The model and important technical parameters of the Data Logger can be found on the nameplate. The model and important technical parameters of the Data Logger can be found on the nameplate.



⚠ WARNING

The nameplate contains important parameters, which must be kept visible and free of stains and damage.

3.3 Checking upon Receiving

The product is thoroughly inspected and packed before delivery. However, it is possible for damage to occur during transport. Check the following items carefully once receiving the product:

- Check if the packing list matches the items included in the delivery. See 3.1 Scope of Delivery.
- Confirm that the received model is the same as the purchased one.
- Check the device thoroughly and ensure there are no visible damages.

If there are any problems, contact SUNGROW or the forwarding company.

⚠ WARNING

Proceed with installation and commissioning only if the product is intact without signs of damage! Before installation, ensure that:

- **The product is intact without any damages.**
- **Related documents, such as quick installation guide, are enclosed.**

3.4 Storage

If the Data Logger is not installed immediately after receiving, observe the following requirements to store it properly.

- Store the Data Logger in its original packing case in a well-ventilated, dry, and clean indoor environment.
- Ensure that the storage carrier can carry the weight of the Data Logger with the package.
- Ensure the device is kept in a well-ventilated and moisture-proof place, without accumulation of water.
- Ambient temperature: -40℃~+70°C. Relative humidity: 0-95%, no condensation.
- Take precautions to protect the device against damage due to harsh environment such as sudden temperature changes or collision.
- Conduct regular inspection, preferably at least once a week. Check whether the packaging is intact and prevent any damage that may be caused by pests and animals. Replace the packaging immediately if it is damaged.
- If the storage period exceeds six months, open the packaging to inspect the equipment and conduct power-on testing.

WARNING

- **Do not store the equipment without packaging!**
- **Do not store the equipment outdoors or under direct sunlight.**
- **No tilting or stacking!**

After long-time storage, thoroughly check the Data Logger and ensure it is undamaged before installation. If necessary, install the Data Logger only after it has been tested by qualified personnel.

4 Mechanical Installation

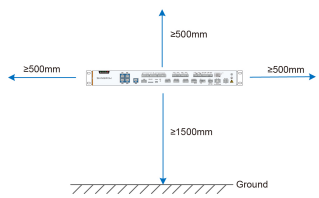
4.1 Installation Location Selection

Environment Requirements

- The Data Logger has an IP20 protection rating and should only be installed indoors.
- Ambient temperature: –30°C to +60°C. Ambient relative humidity: 0% to 95% (no condensation). Excessive humidity may cause damage to internal components.
- Pay attention to moisture prevention and ensure that the installation environment is free from flammable, explosive, and chemically corrosive substances.

Clearance Requirements

- Before installing the Data Logger, ensure that there is sufficient space around the installation location.
- Ensure that the Data Logger is oriented correctly, with the wiring terminals positioned at the bottom. This helps prevent dust, particles, and other airborne substances from entering the equipment over time, which could potentially impact its service life.
- Keep the Data Logger at least 1,500mm above the ground surface. Reserve a clearance of at least 500mm for convenient maintenance and servicing. The following figure shows the required minimum spacing.

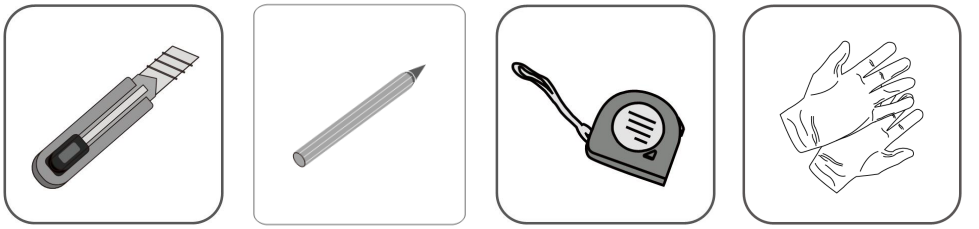


NOTICE

When connecting outdoor equipment, such as a Meteo Station, to the Data Logger, install a Surge Protection Device (SPD) to protect the communication system. Choose the right SPD based on the site conditions and requirements.

4.2 Installation Tools

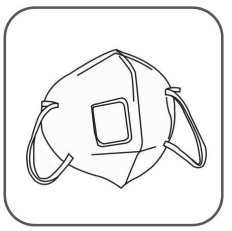
Installation tools include, but are not limited to, the following recommended ones. If necessary, use other auxiliary tools on site.


Utility knife

Marker

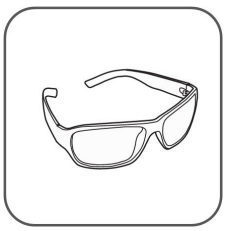
Measuring tape

Protective gloves


Dust mask


Safety footwear

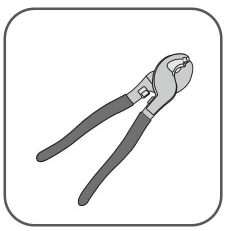

Vacuum cleaner

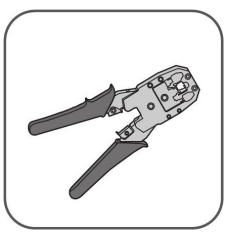

Goggles

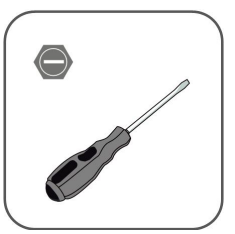

Hammer drill


Electric screwdriver

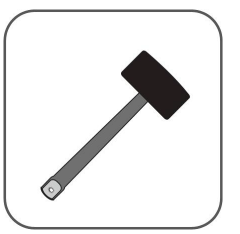

Wire stripper


Wire cutter


Wire crimping tool


Slotted screwdriver


Phillips screwdriver


Rubber mallet

4.3 Mounting the Data Logger

As long as the installation environment requirements are met, the Data Logger can be installed at any suitable indoor location. The Data Logger can be rack-mounted or wall-mounted.

4.3.1 Wall-Mounted Installation

Prerequisites

DANGER

Avoid drilling holes in the utility pipes and/or cables attached to back of the wall!

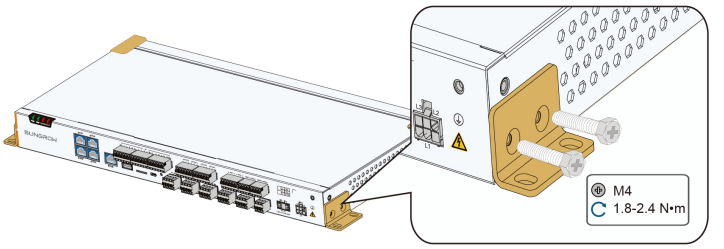
When holes are punched on the mounting surface, it is recommended to turn on a vacuuming device and wear goggles and a dust mask to prevent dust from entering the eyes or being inhaled into the body.

Installed parts

- Marker, not included in the scope of supply
- Hammer drill, not included in the scope of supply
- Bottom supporter, included in the scope of delivery
- Mounting ear, included in the scope of delivery
- Expansion bolt, included in the scope of delivery
- Tapping screw, included in the scope of delivery
- Screwdriver, not included in the scope of delivery

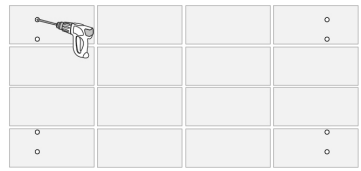
Install Mounting Ears and Bottom Supporters

Anchor the mounting ears and bottom supporters to the Data Logger with supplied M4x8 cross recessed countersunk head screws. The fastening torque is 1.8-2.4N·m, and the anchoring method is as follows:

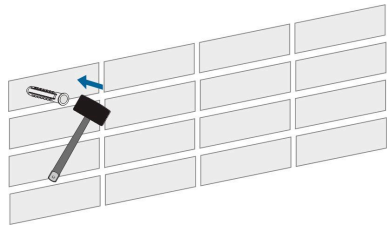


Mount the Data Logger to the Wall

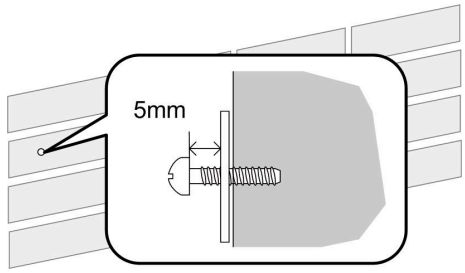
step 1 Mark positions for drilling holes on the installation wall. Drill the holes with a hammer drill of φ6mm. (Note: Reserve sufficient clearances around the Data Logger.)



step 2 Insert the expansion sleeve into the drilled hole, and make it completely embedded in the wall with a rubber hammer.



step 3 Insert the tap screw and mounting ear successively into the expansion sleeve, to fix the Data Logger onto the wall.



step 4 Fasten the tapping screw with a screwdriver by the torque of 0.3N·m.

- - End

4.3.2 Rack-Mounted Installation

Use 1U standard rack in case of the rack-mounted installation.

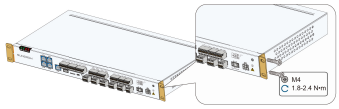
Prerequisites

The following lists the components, tools, and devices used during installation.

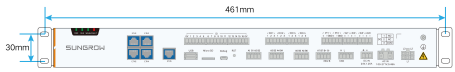
- 1U standard rack, not included in the scope of delivery
- Screwdriver, not included in the scope of delivery
- Screw, not included in the scope of delivery
- Nut, not included in the scope of delivery

Install mounting ears

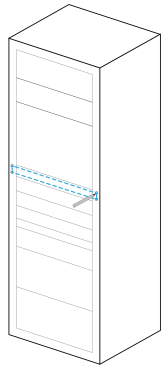
Anchor the mounting ears to the Data Logger with supplied M4x8 cross recessed countersunk head screws. The fastening torque is 1.8-2.4N·m, and the anchoring method is as follows:



step 1 Mark positions on the rack according to dimensions of the Data Logger.



step 2 Drill holes on the rack with a hammer drill of φ6mm.



step 3 Level the mounting ears with the drilled holes on the rack.

step 4 Fix the Data Logger in the sequence of screws, mounting ears, rack, and nuts.

- - End

5 Electrical Connection

5.1 Safety Instructions

⚠ DANGER

High voltage hazard!

The Data Logger should be reliably ground. Never touch the AC power supply port "AC IN 100–277V, 0.48A" and MPLC communication port "L1/L2/L3" when the device is powered on.

NOTICE

High Risk hazard! Danger will be caused by touching the MPLC communication port immediately after powering down. Wait at least 30s to have the capacitor discharge completely.

NOTICE

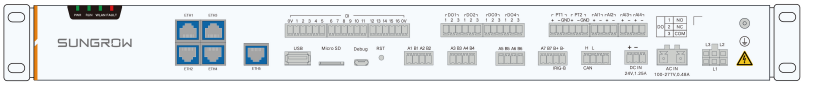
Incorrect wiring may result in damage to the Data Logger and potential harm to the operator.

NOTICE

All cables are intact, well-insulated, and appropriately dimensioned.

5.2 Port Introduction

The layout and identifiers of the Data Logger terminals are shown below.



Symbol	Name	Recommended cables	Description
ETH1~ETH2	Ethernet port	-	Data exchange Ethernet port. Can be connected to the background using devices such as switches and routers.

Symbol	Name	Recommended cables	Description
ETH3~ETH4	Fast dispatch port	-	Used for active and reactive fast scheduling using Goose.
ETH5	Ethernet port	-	Reserved for master/standby functions.
DI	Digital input	0.75mm^2 outdoor anti-ultraviolet wire	Passive dry contact input port
USB	USB port	-	Reserved
Micro SD	SD port	-	Used for software programming (this port is only available to SUNGROW technicians)
Debug	Debug port	-	Used for debugging of the Data Logger
RST	Reset	-	Press and hold it for > 30s to restore the default settings. Press and hold it for < 3 seconds, reserved
DO1~DO4	Digital output	0.75mm^2 outdoor anti-ultraviolet wire	Relay output interface Relay specification: 250Vac/1A or 30Vdc/1A
PT1 and PT2 AI1~AI4	Analog input	0.75mm^2 outdoor anti-ultraviolet wire	PT100/PT1000 detect range: -30°C ~120°C Two-wire or three-wire connection method AI1: 0~10Vdc AI2-AI4: 4~20mA
A1B1~A7B7	RS485 communication interface	2 x (0.75~1.5) mm^2 outdoor anti-ultraviolet twisted pair with a shielding layer	Support of 7 inputs of RS485 Can be connected to both slave device and background
IRIG-B	Inter-Range Instrumentation Group-Time Code Format B	-	Reserved

Symbol	Name	Recommended cables	Description
CAN	CAN communication port	-	Reserved
DC IN 24V, 1.25A	DC24V power supply port	0.75~1.5mm^2 outdoor anti-ultraviolet wire	If the current is ≤1.25A, the switch mode power supply at this port requires reinforced insulation.
AC IN 100–277V, 0.48A	AC power supply port	0.75~1.5mm^2 outdoor anti-ultraviolet wire	Connecting 100~277Vac (50/60Hz), current≤0.48A
	Ground hole	1~1.5mm^2 outdoor anti-ultraviolet wire	Connecting protective grounding cable
L1, L2, L3	MPLC communication interface	0.5~0.75mm^2, cable withstand voltage: cable grounding working voltage ≥ 1000 V	Can be connected to string inverters equipped with PLC communication function

AC power supply port and MPLC communication interface

High voltages may be present on the AC power supply port “AC IN 100–277V, 0.48A” and MPLC communication port “L1, L2, L3". Therefore, before cable connection, ensure that the ports are free of voltage and the grounding cable is reliably connected.

Digital input/output ports

Digital input/output ports (DI and DO1~DO4) are configured to collect node data and control node communication.

RS485 communication ports

For the RS485 communication ports (A1B1~A7B7), the communication distance should be no more than 1,000m.

5.3 Wiring Overview

The Data Logger:

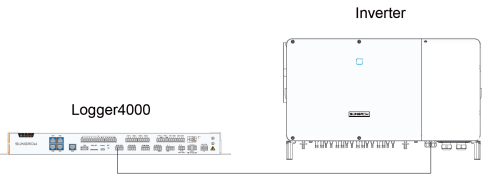
- can be connected to devices in the PV system such as the inverter, combiner box, Meteo Station, and energy meter through the RS485 port
- can be connected to background devices through the Ethernet port
- can be connected to transformer or other devices through the MPLC port

5.4 Connecting to the Inverter

5.4.1 Connecting to the Device with RS485 Port

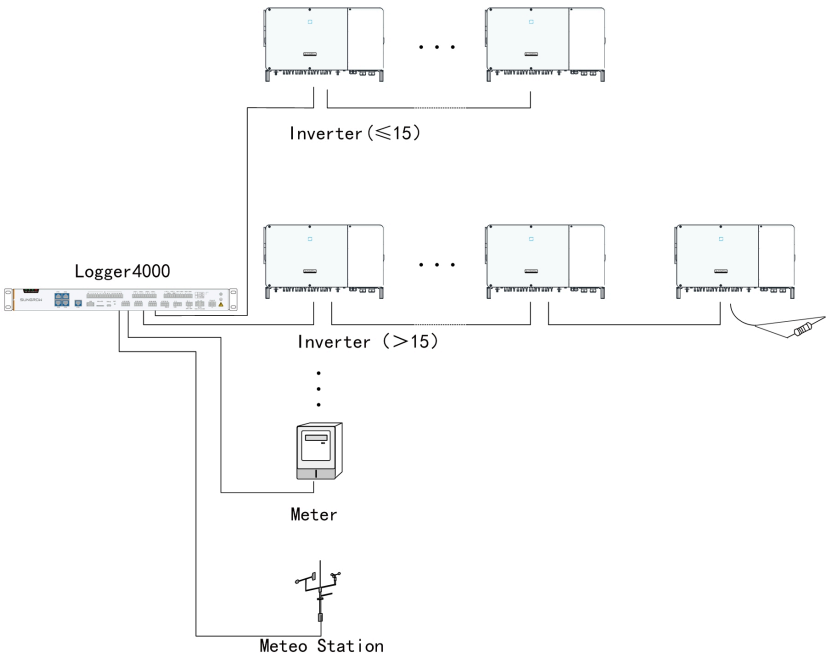
Use an RS485 shielded twisted pair (STP) to connect any RS485 port (A1B1–A7B7) of the Data Logger and the RS485 communication terminal of the inverter.

Connecting to a Single Inverter



Connecting to Multiple Inverters

Multiple inverters are connected to the Data Logger in the RS485 daisy chain manner.

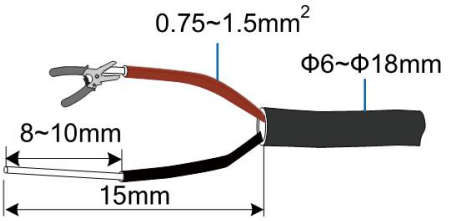


- The Data Logger supports 7 RS485 buses and 300 devices at most. Each RS485 bus supports 80 devices at most.
- Devices of different types must be connected to different RS485 communication ports of the Data Logger. For example, the transformer and the inverter should be connected to different RS485 communication ports of the Data Logger.
- The address of each device on the RS485 bus should be within the set address range (1 to 246) of the Data Logger, and duplicate addresses are not allowed. Otherwise, communication failure occurs.
- Serial port parameters of each device on the RS485 bus should be consistent with those of the Data Logger. The serial port parameters include baud rate, data bit, stop bit, and check bit.

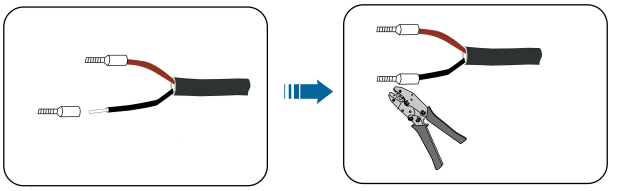
Connection Method

step 1 Lead the RS485 communication cable from the inverter to the wiring area of the Data Logger.

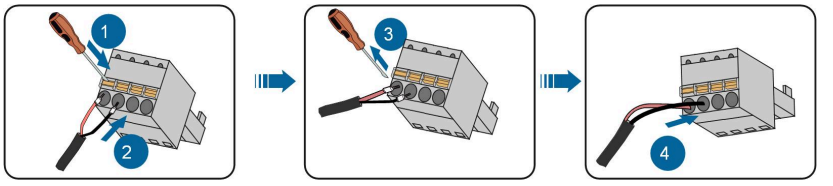
step 2 Strip the protection layer of the communication cable with a wire stripper. Cable specification and stripped length are as follows.



step 3 Install appropriate cord end terminals on the communication cables after removing the protective layer, and use a crimping tool to securely crimp them.



step 4 Crimp the wiring terminals.

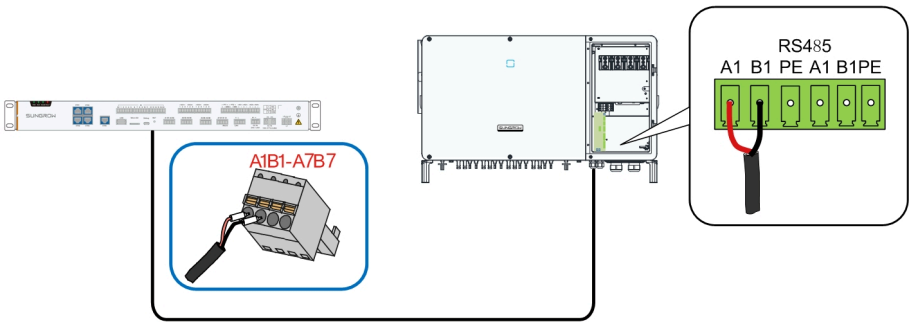


NOTICE

- **Connect RS485A to port A and RS485B to port B.**
- **The RS485 communication cable must be the shielded twisted pair with the shielding layer single-point grounded.**

When a multi-core and multi-strand copper core cable is used, the communications cable connected to an RS485 port on Logger must be crimped to cord end terminals of proper specification.

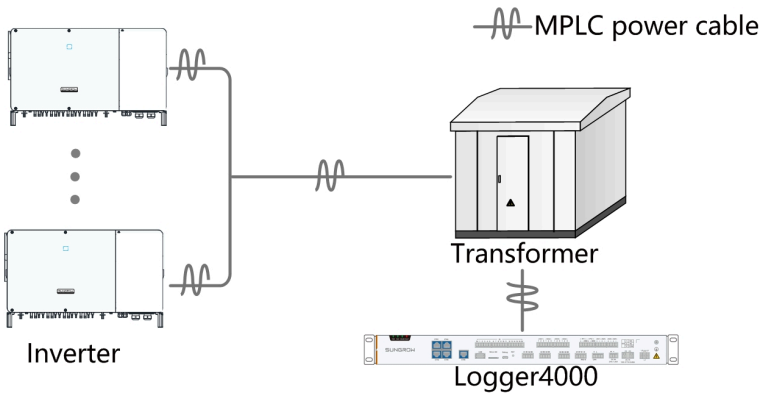
step 5 Connect the wiring terminal to the terminal “A1B1~A7B7" of the Data Logger.



- - End

5.4.2 Connecting to the Inverter with MPLC Port

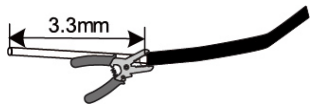
Integrated with MPLC master node, the Data Logger can be connected to the inverter integrated with MPLC slave node and achieve MPLC communication by using existing power cable.



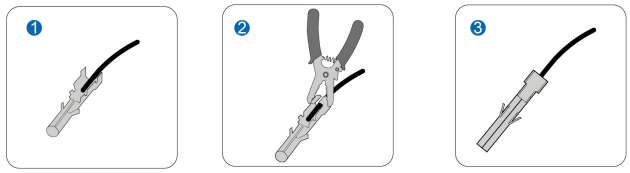
Preparation

- Disconnect the transformer from the grid.
- Disconnect the DC side of the inverter and make sure the system is in safe state.
- If the MPLC cable in the scope of delivery is found short on site, prepare the MPLC cable referring to the following steps.

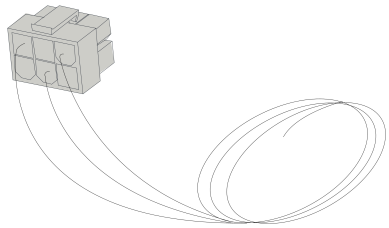
1. Strip the protection layer of the MPLC cable with a wire stripper. Stripped length are as follows.



2. Install the pin on the MPLC cable after the protective layer has been removed, and crimp the MPLC cable using crimping tools. Prepare three MPLC cables with pins.



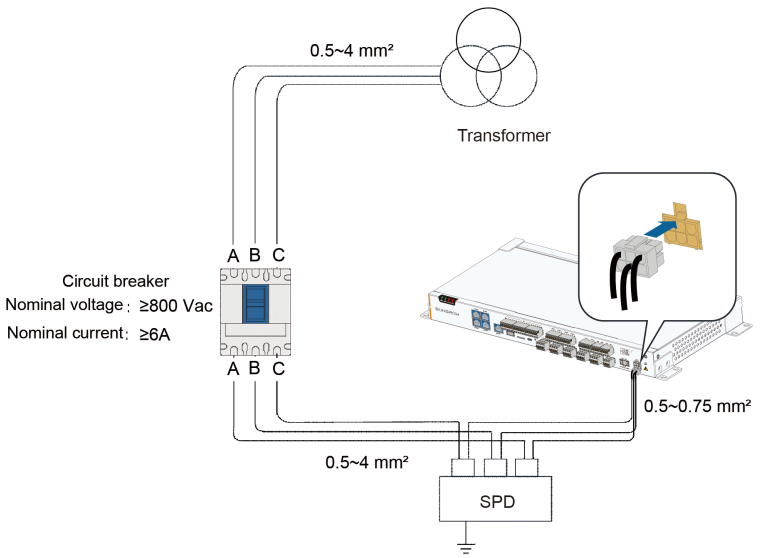
3. Connect the pins of the cables to the socket, as shown in the following figure.



Connection Method

Connect one end of the MPLC power cable in the scope of delivery to MPLC ports L1, L2, and L3 of the Data Logger, and the other end to the three-phase ports of the circuit breaker.

The L1 port of the Data Logger must be connected to phase A of the circuit breaker, the L2 port to phase B, and the L3 port to phase C. The details are shown in the following figure.



The external circuit breaker is not included in the scope of delivery, and users need to prepare it by themselves if necessary.

The external circuit breaker just needs to meet the above two parameters (nominal voltage and nominal current). Other parameters, such as breaking capacity, are not mandatory requirement.

NOTICE

Isolation voltage of the MPLC cable should be greater than 1,000V, recommended cable specification: 0.5~0.75mm^2.

The MPLC connection cable must be connected to a three-level surge protector, otherwise it may cause damage to the equipment.

NOTICE

The built-in MPLC module of the Data Logger supports AC voltage less than 1000V.

When using the MPLC communication method, the communication distance between the Data Logger and the inverter should not exceed 1000 meters.

NOTICE

MPLC networking is intended for medium voltage grid-connection. If low voltage grid-connection is desired, observe the following two conditions:

- **Never connect a load between the Data Logger and the MPLC slave node.**
- **The distance between the Data Logger and the load should be greater than 20m, that is, the LV grid-connection point should be more than 20m away from the nearest load distribution line. The load includes air conditioners, machines, motors, etc.**

NOTICE

When using the MPLC communication method, consider the following:

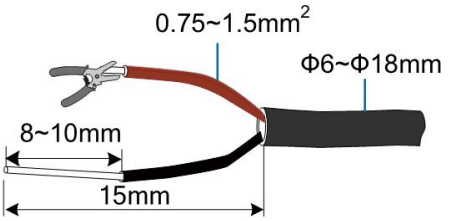
- **The electrical connection between the inverter and the downstream transformer has been successfully established and verified to be correct.**
- **Input and output circuit breakers of the Data Logger, inverter, and transformer are connected.**

5.5 Connecting to the Meteo Station

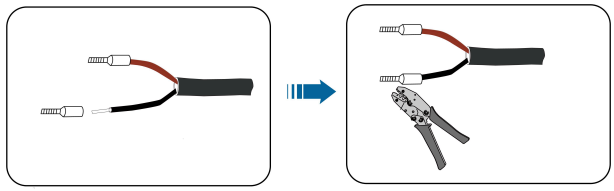
Meteo Station of the Modbus-RTU protocol can be connected to the Data Logger.

step 1 Lead the RS485 communication cable from the Meteo Station to the wiring area of the Data Logger.

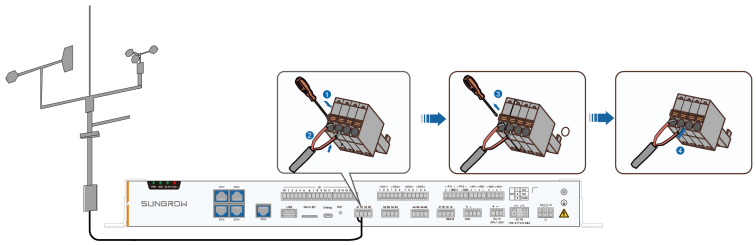
step 2 Use a wire stripper to strip off the protective layer and insulation layer of the communication cable, as shown in the following figure.



step 3 Install appropriate cord end terminals on the communication cables after removing the protective layer and insulation layers, and use a crimping tool to securely crimp them.



step 4 Connect the cable to the RS485 port of the Data Logger, as shown in the figure below.



- - End

5.6 Connecting to the Energy Meter

The Logger can be connected to the energy meter through the RS485 port or the Ethernet port. Specifically, refer to the table below.

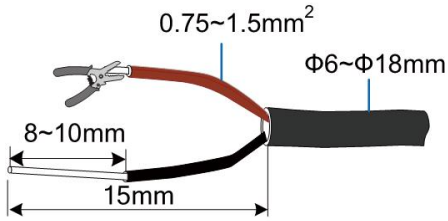
Brand	Communication Port	Port definition	Protocol Type	Wiring
Wasion	24	RS485-A	Modbus RTU	5.6.1 RS485 Cable Connection
	25	RS485-B	Modbus RTU	
	26	Public	Modbus RTU	
	27	RS485-A	Modbus RTU	
	28	RS485-B	Modbus RTU	
Acrel	21	RS485-A	Modbus RTU	
	22	RS485-B	Modbus RTU	
Weidmueller EM610	17	RS485-A	Modbus RTU	
	16	RS485-B		

Brand	Communication Port	Port definition	Protocol Type	Wiring
Janitza UMG604	22	RS485-B	Modbus RTU	
	23	RS485-A		
	Ethernet	Ethernet	Modbus TCP	5.6.1 RS485 Cable Connection

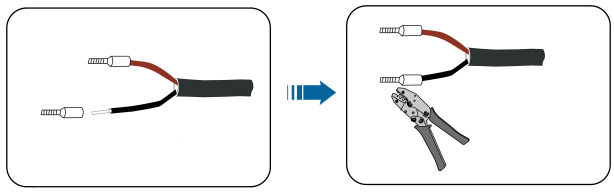
5.6.1 RS485 Cable Connection

step 1 Lead the RS485 communication cable from the meter to the wiring area of the Data Logger.

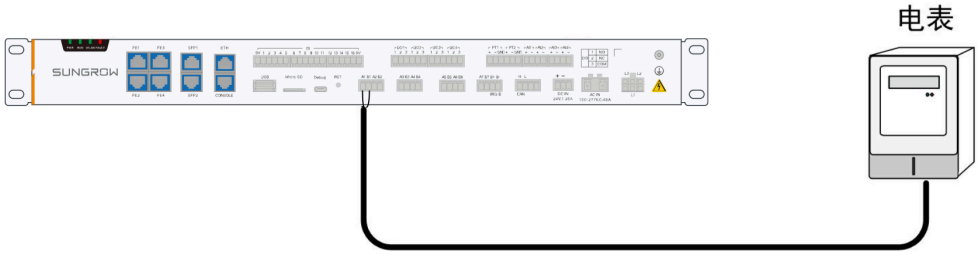
step 2 Use a wire stripper to strip off the protective layer and insulation layer of the communication cable, as shown in the following figure.



step 3 Install appropriate cord end terminals on the communication cables after removing the protective layer and insulation layers, and use a crimping tool to securely crimp them.



step 4 Connect the cable to the RS485 port of the Data Logger, as shown in the figure below.



- - End

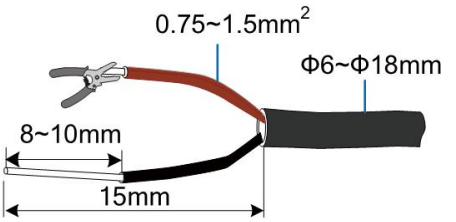
5.6.2 Ethernet Cable Connection

Connect the "Ethernet" port of the energy meter and the "ETH1, ETH2, ETH5" port of the Data Logger with a network cable.

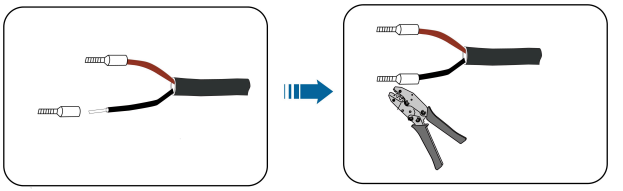
5.7 Wiring of DI signal

The DI port is used to access DI signals, such as remote grid dispatching instructions and alarms. Only passive dry contact signals are supported. It is recommended that the signal transmission distance not exceed 10m.

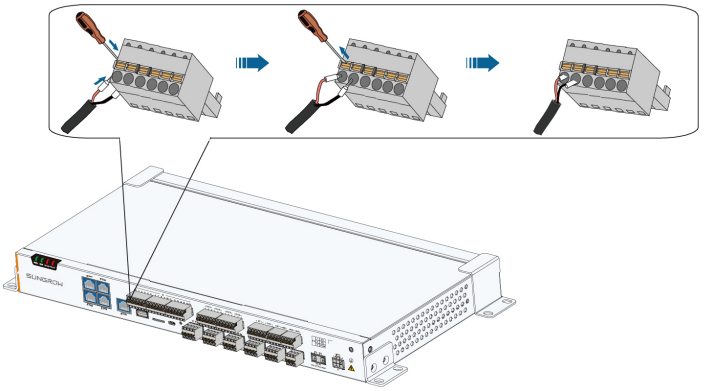
step 1 Strip the protection layer and insulation layer of the dry contact input signal cable with a wire striper, as shown in the figure below.



step 2 Install cord-end terminals and crimp them with crimping pliers.



step 3 Connect the cord end terminals to the plug "DI" outside the Data Logger, as shown below. Port "OV" and Port "1" are taken as an example.

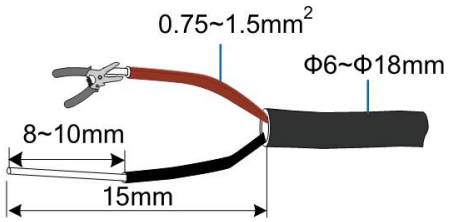


- - End

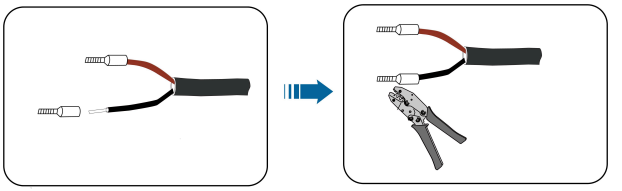
5.8 Wiring of DO Signal

Port 1 corresponds to NO, port 2 to NC, and port 3 to COM. NO/COM is the normally open contact, and NC/COM is the normally closed contact. It is recommended that the signal transmission distance not exceed 10m.

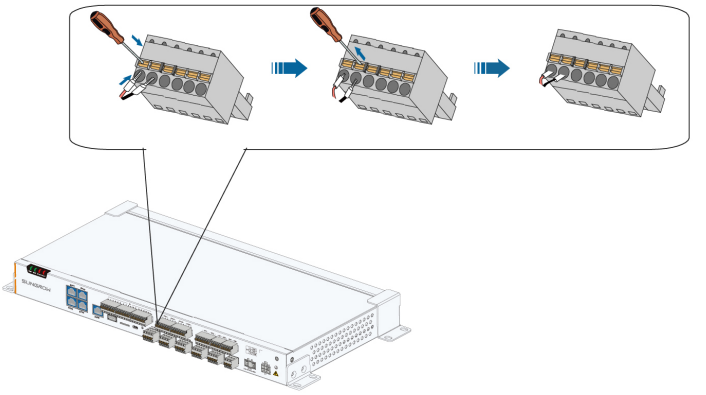
step 1 Strip the protection layer and insulation layer of the dry contact output signal cable with a wire striper, as shown in the figure below.



step 2 Install cord-end terminals and crimp them with crimping pliers.



step 3 Connect the cord end terminals to plugs “DO1”~”DO4" outside the Data Logger, as shown below. Port “DO1" is taken as an example.

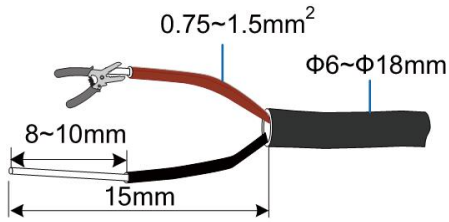


- - End

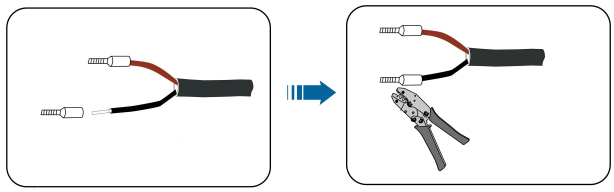
5.9 Wiring of AI Signal

The AI port is used to access AI signals of devices such as environmental monitoring sensors. It is recommended that the signal transmission distance not exceed 10m.

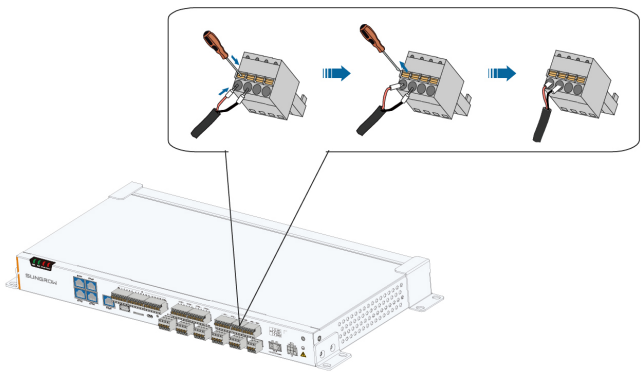
step 1 Strip the protection layer and insulation layer of the analog input signal cable with a wire striper, as shown in the figure below.



step 2 Install cord-end terminals and crimp them with crimping pliers.



step 3 Connect the cord end terminals to plugs "AI1"~"AI4" outside the Data Logger, as shown below. Port "AI1" is taken as an example.



- - End

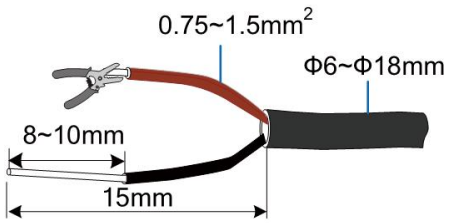
Port	Symbol	Description
AI	AI1	Supported voltage input range: 0V~10Vdc
	AI2	Supported current input range: 4mA~20mA
	AI3	
	AI4	

AI + is connected to AI signal +, AI - is connected AI signal -.

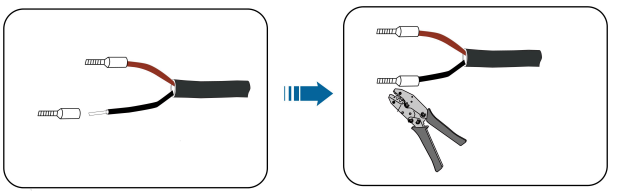
5.10 Wiring of PT Signal

The Data Logger is designed with two PT ports and supports 3-wire or 2-wire PT100/PT1000 temperature sensor connection.

step 1 Strip the protection layer and insulation layer of the signal cable for temperature detection with a wire striper, as shown in the figure below.



step 2 Install cord-end terminals and crimp them with crimping pliers.



step 3 Connect the cord end terminals to plugs “PT1”~”PT4" outside the Data Logger, as shown below. Port “PT1" is taken as an example.

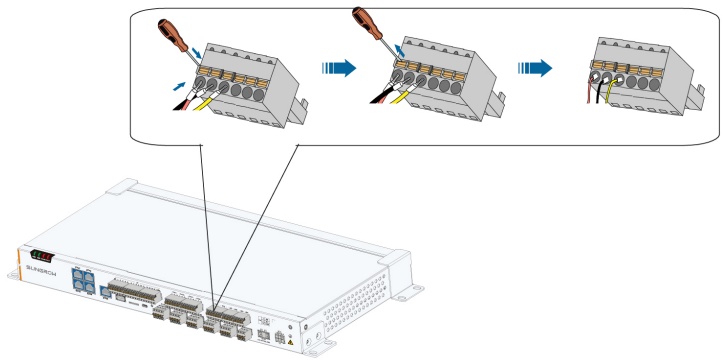


figure 5-1 3–wire PT100/PT1000 connection

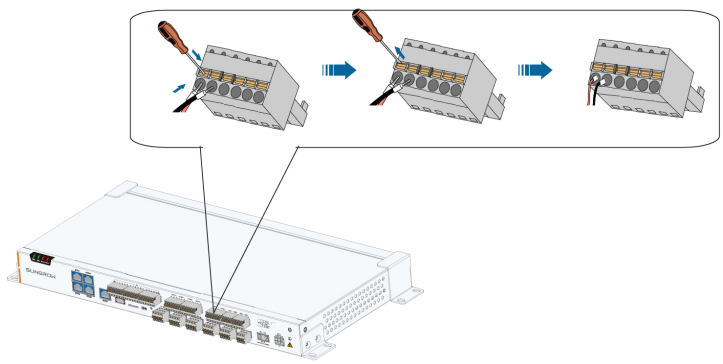


figure 5-2 2–wire PT100/PT1000 connection

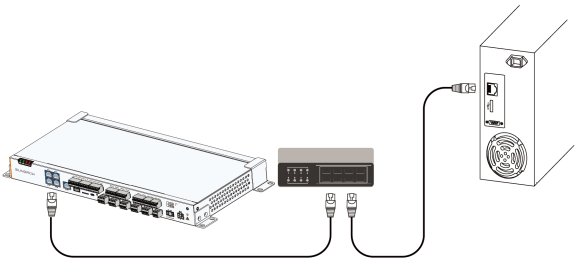
- - End

5.11 Connecting to the Remote Monitoring Device

The Data Logger can be connected to the background with an Ethernet switch or a router.

The Data Logger is equipped with three Ethernet ports: ETH1, ETH2 and ETH5. Access the Ethernet switch and the router through either port. This section takes connecting to an Ethernet switch as an example to illustrate the wiring steps.

step 1 Insert one plug of the supplied network cable into the network port of the Ethernet switch and the other plug into the ETH port of the Data Logger.



step 2 Set network parameters.

- - End

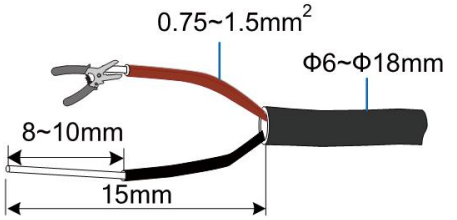
- For the default IP address of Ethernet ports (ETH1, ETH2, ETH5), see 6.2 Commissioning Step.
- If the DHCP (Dynamic Host Configuration Protocol) feature is enabled for the Ethernet port (ETH1, ETH2, and ETH5), its IP address can be retrieved after it is connected to a router or other device.

5.12 Connecting to the AC Power Supply

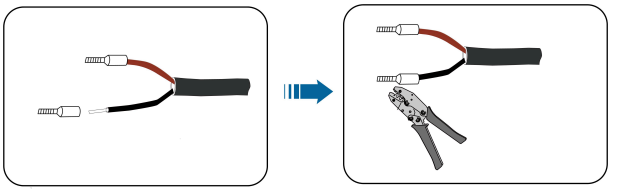
The Data Logger can be connected to a power source with voltage ranging from 100 to 277Vac.

step 1 Lead the external power supply cable to the wiring area of the Data Logger.

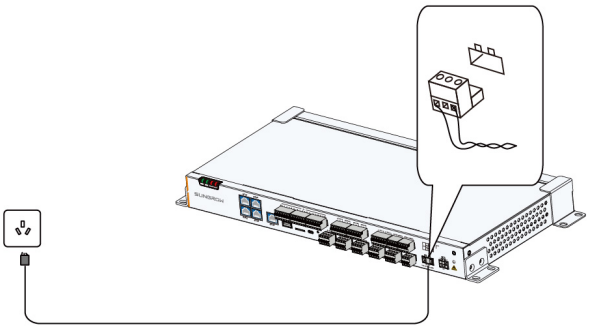
step 2 Strip off the protective layer and insulation layer of the power cable with wire strippers, as shown below.



step 3 Install appropriate cord end terminals on the power cables after removing the protective layer and insulation layers, and use a crimping tool to securely crimp them.



step 4 Connect the cord end terminals to the plug "AC IN 100~277V, 0.48A" outside the Data Logger.



- - End

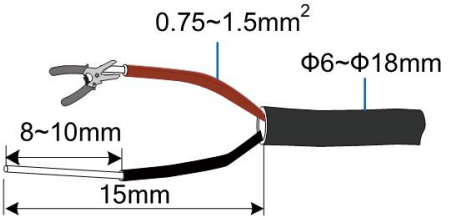
The Data Logger can be connected to both AC power supply and DC power supply. UPS can be used as a DC backup power source.

5.13 Connecting to the DC Power Supply

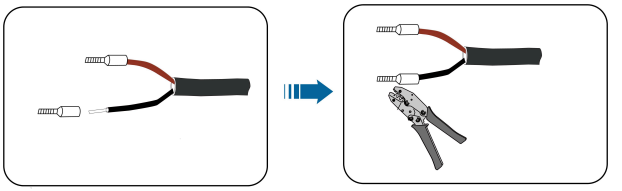
The Data Logger can be connected to 24Vdc external power supply. UPS can be used as a power source.

step 1 Lead the external power supply cable to the wiring area of the Data Logger.

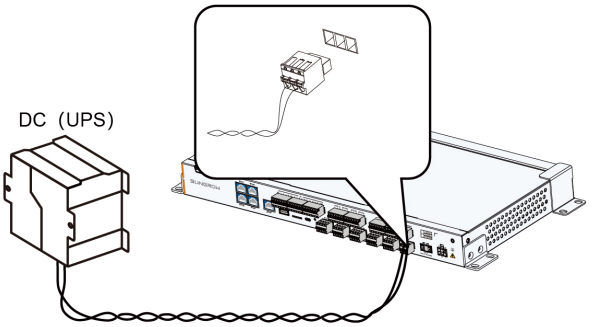
step 2 Strip off the protective layer and insulation layer of the power cable with wire strippers, as shown below.



step 3 Install appropriate cord end terminals on the power cables after removing the protective layer and insulation layers, and use a crimping tool to securely crimp them.



step 4 Connect the cord end terminals to the plug "DC IN 24V, 1.25A" outside the Data Logger.



- - End

5.14 Earthing Connection

Prerequisites

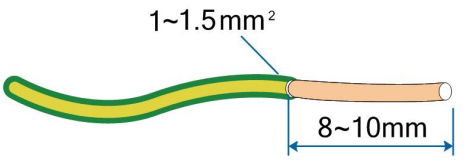
WARNING

The grounding cable should be grounded reliably. Otherwise:

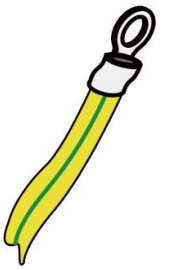
It may cause fatal electric shock to the operator in case of failure.

The equipment may be damaged when struck by lightning.

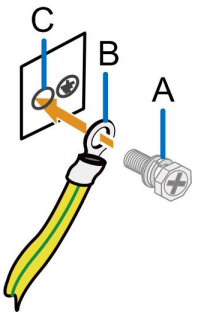
step 1 Strip the protection layer and insulation layer of the grounding cable by specific length, as shown in the figure below.



step 2 Select proper OT terminal and crimp them.



step 3 Secure the grounding cable to the grounding hole of the Data Logger, as shown in the figure below.



Item	Definition	Remarks
A	Screw	M4

Item	Definition	Remarks
B	OT terminal	-
C	Grounding hole	-

step 4 Fasten the screw with a wrench by the torque of 5±1N·m.

- - End

6 Commissioning

6.1 Inspection before Commissioning.

No.	Check Item	Result
1	All cables are intact, well-insulated, and appropriately dimensioned.	□
2	All cables are connected correctly and firmly.	□
3	The polarity of the power supply cable is correct. The grounding cable is reliably grounded.	□

6.2 Commissioning Step

Item	Description
1	Connect the commissioning PC to one of ETH1, ETH2, ETH5 ports of the logger with a network cable. • ETH1, default IP: 12.12.12.12, virtual IP: 15.15.15.15 • ETH2, default IP: 13.13.13.13, virtual IP: 16.16.16.16 • ETH5, default IP: 14.14.14.14, virtual IP: 17.17.17.17
2	Power on the Data Logger.
3	Observe whether the indicator RUN at the exterior of the Data Logger flickers normally.
4	Access the default IP address of the connected port using Internet Explorer, Safari, or Chrome.
5	Configure serial port parameters on the Web interface.
6	Add PV devices connected to the Data Logger to the Web interface by searching for them or manually adding them.
7	Configure IP address.
8	Configure iSolarCloud address if inverter data needs to be uploaded to iSolarCloud. The default iSolarCloud server is "**Chinese Server**". Users in mainland China select "**Chinese Server**". Users in Europe select "**European Server**". Users in Australia select "**Australian Server**". Users in other regions select "**International Server**".

Item	Description
9	Navigate to the web interface of the Data Logger to verify the operation of the string inverters manufactured by SUNGROW by reviewing their operational data.
10	Create a plant via the iSolarCloud App and verify the accuracy of the data.

Use the iSolarCloud App to create a new plant. Scan the QR code on the front label of the Data Logger, or manually enter the serial number (S/N) to add the communication equipment. For details, refer to the Quick Guidance of iSolarCloud App. Scan the QR Code to view or obtain the Quick Guidance of iSolarCloud App.

7 Web Main Interface

7.1 Running Requirements

Item	Description
Browser	IE11 or later, Chrome65 or later, and Safari11 or later
Min. resolution	1024*768

7.2 Log in to Web Interface

7.2.1 Login Steps

step 1 Connect the Data Logger to the PC.

step 2 Configure the IP address of the PC and that of the Ethernet ports (ETH1, ETH2, ETH5) to the same network segment. The default IP address of Ethernet ports is 12.12.12.12. The IP address of the PC can be set to 12.12.12.X and the subnet mask to 255.255.255.0. The default and virtual IP addresses for the logger's Ethernet ports (ETH1, ETH2, and ETH5) are shown below.

table 7-1 IP Address for Ethernet Port

Ethernet port	Default IP Address	Virtual IP Address
ETH1	12.12.12.12	15.15.15.15
ETH2	13.13.13.13	16.16.16.16
ETH5	14.14.14.14	17.17.17.17

The IP addresses listed in the above table can be modified on the **System > Port Parameter > Ethernet** page according to the on-site situation.

step 3 Enter **http://Data logger_IP** or **https://Data logger_IP** in the address bar on PC, and press **[Enter]** to go to the Web interface.
Replace "Data logger_IP" with the default or virtual IP address for the Data Logger's Ethernet port that is connected to the PC. For example, if the PC is connected to ETH1, replace it with 12.12.12.12 or 15.15.15.15. For details on IP addresses, see table 7-1 IP Address for Ethernet Port.

- Under the Network Safety Mode, login is only possible via the HTTPS protocol.
- If the Network Safety Mode is not turned on, both HTTP and HTTPS protocols can be used for login.

step 4 Optional: Click  in the upper right corner to select the desired language.

step 5 Click  , enter the username and password to log into the Web with O&M user permissions.

- Username: **maintain**
- Password: **pw@111111**

step 6 Click **Confirm** to navigate to the Web interface for O&M users.

- - End

7.2.2 Modify Password

It is recommended to change the login password after initial login.

NOTICE

To keep your account secure, it is recommended to change the password regularly and always make sure you remember the new one. You may see a password leak if you do not change the default password, or an increased risk of the account getting hacked or compromised if you use the default password for a long time, and you may not be able to access the device if you have lost your password. These situations may cause losses for the plant, and such losses shall be borne by users.

Under Network Safety Mode, you will be required to change your password at first login or when the password has expired. Otherwise, you cannot perform any operations. For details on password expiration, see 9 System Management .

step 1 Click > **Modify Password** to enter the corresponding page.

step 2 In the pop-up **Modify Password** dialog box, enter the **Old Password** and **New Password**, and then **Confirm New Password**.

Passwords should be 8–32 character long and contain at least three of the following four character types: uppercase letters, lowercase letters, numbers, and special characters. The new password cannot be the same as the old one.

step 3 Click **Save** and log into the system using the new password.

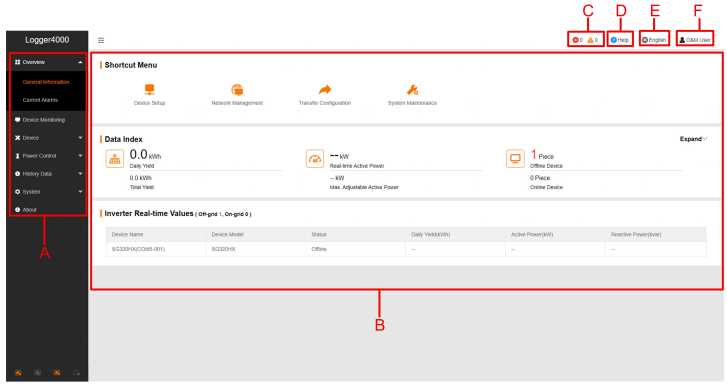
- - End

If you forgot your password, contact system administrator or SUNGROW.

7.3 Web Main Interface

When logging into the web for the first time as an O&M user, the **Help** page pops up. Follow the instruction to perform operations such as time synchronization, device connection, and forwarding configuration.

The main interface is as follows:



Item	Name	Description
A	Navigation menu	Display main function modules of the Web

Item	Name	Description
B	Function display area	Display the current interface
C	Alarm icon	Display the current alarm level and alarm number. Users can click the icons to enter the corresponding alarm page.
D	Help	Display the basic configuration steps of the Data Logger.
E	Language menu	Click the button to select the desired language.
F	User	Display the current login user.

 indicates the connection status of Ethernet port of the Data Logger.

 indicates the cloud connection status of the Data Logger.

7.4 Operation Procedure

Prerequisites

- Finished the electrical connection.
- Logged into the Web.

step 1 Configure serial ports of the Data Logger.

After logging into the Web, first configure the serial ports to ensure that the Data Logger can normally communicate with downstream devices. See 7.9.11 Port Parameter.

step 2 Calibrate the system time.

Check whether the current system time is correct, and perform manual time synchronization or automatic time synchronization when necessary. See 7.9.5 System Time.

step 3 Add the device via auto search.

Devices that can be automatically searched, such as SUNGROW string inverter, can be added via the auto search function with addresses allocated automatically. See 7.7.1 Device List.

step 4 Add other devices. See 7.7.1 Device List.

step 5 Configure forwarding service.

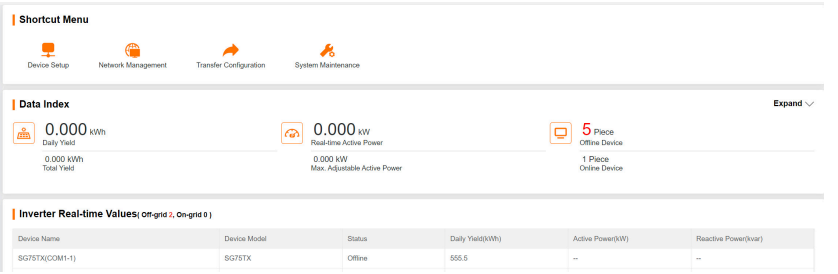
After all devices have been added, configure the forwarding service to ensure that the Data Logger can forward the data to upstream devices. See 7.9.6 iSolarCloud~7.9.10 GOOSE.

- - End

7.5 Overview

7.5.1 General Information

Click **Overview > General Information** to enter the corresponding page.



Shortcut Menu

- **Device Setup**: Click the menu to add, delete, modify, and view the device or perform auto search operation to search the device to which address will be automatically allocated. See 7.7.1 Device List.
- **Network Management**: Set Ethernet parameters. See 7.9.11 Port Parameter.
- **Transfer Configuration**: Transfer the data connected by the system to the background. See 7.9.6 iSolarCloud~7.9.10 GOOSE.
- **System Maintenance**: Support of operations such as system upgrade, log export, and rebooting. See 7.9.2 System Maintenance.

Data Index

Information such as today yield, total yield, real-time active power, and number of offline devices can be viewed.

Click **Expand** to view more information.

Inverter Realtime Values

Information on the inverter such as state, daily yield, active power, and reactive can be viewed.

7.5.2 Current Alarms

Click **Overview > Current Alarms** to enter the corresponding page.

Information such as device name, alarm name, alarm type, alarm time, fault code, and fault ID can be viewed.

7.6 Device Monitoring

Click **Device Monitoring** to view the corresponding information.

Device information such as real-time values, DC data, initial parameter, protection parameter, general parameter, device instruction and device information can be viewed on this interface.

7.6.1 RealTime Values

Realtime information such as power generation, device state, and active power can be viewed on this page.

step 1 Click **Device Monitoring > Realtime Values** to view the corresponding information.

step 2 Click ⌄ to select the device type.

- - End

7.6.2 DC Info

On this interface, voltage and current information of multiple inputs of MPPTs and strings can be viewed.

Click **Device Monitoring > DC Info** to view the corresponding information.

7.6.3 Initial Parameter

Select the inverter and configure the initial parameter settings. Both individual and batch settings are supported.

step 1 Click **Device Monitoring > Initial Parameter** to enter the corresponding page.

step 2 Optional: Click ⌄ in the device list on the left, select the device type in the drop-down list, and then select the device.

step 3 Select **Country/Region** and **Grid Type**.

step 4 Click **Settings** to set initial parameters for an individual device.

step 5 Optional: Set the initial parameters in batch.

i. Click **Configure Synchronization**.

ii. Select the desired devices in the pop-up dialog, and click **Save** to apply the changes.

- - End

7.6.4 Operation Parameters

Click **Device Monitoring > Operation Parameters** to enter the corresponding page and set operation parameters.

Both individual and batch settings are supported. For configuration methods, see 7.6.3 Initial Parameter.

7.6.5 System Parameters

Click **Device Monitoring > System Parameters** to enter the corresponding page and set the system time of the device.

Both individual and batch settings are supported. For configuration methods, see 7.6.3 Initial Parameter.

7.6.6 Protection Parameter

Click **Device Monitoring > Protection Parameters** to enter the corresponding page and set protection parameters.

Both individual and batch settings are supported. For configuration methods, see 7.6.3 Initial Parameter.

7.6.7 Protection Parameters (Other)

Click **Device Monitoring > Protection Parameters Others** to enter the corresponding page and set protection parameters.

Both individual and batch settings are supported. For configuration methods, see 7.6.3 Initial Parameter.

Protection Parameters Others may vary by inverter model. Please refer to the actual page.

7.6.8 Power Regulation Parameters

Click **Device Monitoring > Power Regulation Parameters** to enter the corresponding page and set power regulation parameters.

Both individual and batch settings are supported. For configuration methods, see 7.6.3 Initial Parameter.

7.6.9 General Parameter

step 1 Click **Device Monitoring > General Parameters** to enter the corresponding page and set general parameters.

step 2 Select **Read-back**, set **Register Address**, **Register Number** and **Address Type**, and click **Read-back** to read the current value of the device.

step 3 Select **Settings**, set **Register Address**, **Data Type** and **Set Value**, and click **Save** to apply the changes to an individual device.

For parameters that need to be set, refer to corresponding communication protocol of the inverter.

step 4 Optional: Configure general parameters in batch.

i. Click **Configure Synchronization** to apply the changes.

ii. Select the desired devices in the pop-up dialog, and click **Save** to apply the changes.

- - End

7.6.10 Device Instruction

Users can perform power on, power off, and factory reset operations on SUNGROW inverters. Both individual and batch settings are supported.
Take powering on inverter as an example:

step 1 Click **Device Monitoring > Device Instruction** to enter the corresponding page.

step 2 Optional: Click ⌄ to select needed device type in the drop-down list.

step 3 Select a device, and click **Boot** to open the dialog box. Click **Boot**.

step 4 Click **Yes** to power on a specific inverter.

step 5 Optional: Batch powering on devices.

i. Select a device, and click **Configure Synchronization** to open the dialog box.

ii. Select the desired devices in the pop-up dialog, and click **Save** to apply the changes.

- - End

7.6.11 Device Information

Click **Device Monitoring > Device Information** to view the corresponding information.

Parameter information such as device S/N, device model, and rated active power can be viewed.

7.7 Device Maintenance

7.7.1 Device List

The **Device List** function is used for managing devices connected to the Data Logger and configuring addresses for these devices. Devices can be searched and automatically added.

7.7.1.1 Auto Search

The "**Auto Search**" function is used for SUNGROW string inverters with addresses automatically allocated.

Inverters without a serial number do not support the automatic search function and device adding function.

Automatic address allocation pops up only when there is an actual address confrontation.

step 1 Click **Device > Device List** to enter the corresponding page.

step 2 Click **Auto Search** to open the **Auto Search** pop-up window. Select **Port**, and click **Search**.

step 3 The devices that meet the search criteria will be displayed.

- - End

7.7.1.2 Export

step 1 Click **Device > Device List** to enter the corresponding page.

step 2 Click  to export the device list.

- - End

7.7.1.3 Import

step 1 Click **Device > Device List** to enter the corresponding page.

step 2 Click  to export the device list.

step 3 After the device list is exported, user can modify device names in batch.

step 4 After the modification is completed, save the device list file in the .csv format.

step 5 Click  to import the .csv file into the Web interface.

- - End

7.7.1.4 Add Device

step 1 Click **Device > Device List** to enter the corresponding page.

step 2 Click **Add Device** to open the **Add Device** pop-up window, select **Device Type** and fill in the information required.

- - End

7.7.1.5 Edit Device

step 1 Click **Device > Device List** to enter the corresponding page.

step 2 Click to open the **Edit Device** pop-up window. The name of the device connected to the Data Logger and other parameters can be modified.

The "**Device Name**" is named in the form device model (port number-communication address).

Take "SG36KTL-M (COM1-7)" as an example. "SG36KTL-M" is device type, "COM1" is the communication port, and "7" is the communication address.

step 3 Click **Save** to apply the changes.

- - End

7.7.1.6 Delete Device

After a device is deleted on site, the user can delete the device from the **Device List** page, to keep device consistency.

step 1 Click **Device > Device List** to enter the corresponding page.

step 2 Select the device to be deleted, click **Delete**.

step 3 Click **Confirm** in the pop-up window, to delete the device.

- - End

7.7.2 Firmware Update

The firmware update function is used to upgrade the SUNGROW residential inverter and string inverter.

step 1 Click **Device > Firmware Update** to enter the corresponding page.

step 2 Click **Select a Firmware File** to select an update method.

Update Methods	Description
Local Update Package	Users need to obtain the device update package in advance and save it locally.
Online Update Package	Use the update package downloaded via iConfig for updating. This requires users to install the iConfig. Contact SUNGROW customer service for the installation package if needed.
iSolarCloud Upgrade Package	Use the update package on iSolarCloud for updating. This requires the Data Logger to access to iSolarCloud. See 7.9.6 iSolarCloud.

The upgrade package supports both .sgu and .zip files, where the .zip file must be compressed by UC packaging tool. Contact SUNGROW customer service if the UC packaging tool is needed.

step 3 Select the upgrade file, and click **Open** to import the file. Matching devices are displayed.

step 4 Select the device, and click **Upgrade**.

step 5 Complete firmware update to view current version, target version, start time, end time and other information.

- - End

7.7.3 Inverter Log

step 1 Click **Device > Inverter Log** to enter the corresponding page.

step 2 Select the device running information, and click to view the export progress.

step 3 Click **Export** to store the exported log locally.

step 4 Click **Cancel** and then **Confirm** on the pop-up window, to cancel the current operation.

- - End

7.7.4 AFCI Activation

step 1 Click **Device > ACFI Activation** to enter the corresponding page.

step 2 Check the devices that need to self-checking, click **Self Checking** and then **Confirm** on the pop-up window.

The status of the self-checking device must be **Enable** . If the self-checking status is **Disable** , you can click to set the self-checking status to **Enable** .

step 3 The result column shows the self-checking status as Self-Testing. After 7~8 seconds, the self-checking result will be displayed as Self-checking Failure or Self-test Pass.

step 4 Click **Clear Fault** to bring up a dialog box showing the status of fault clearing.

- - End

7.7.5 Fault Recorder

step 1 Click **Device > Fault Recorder** to enter the corresponding page.

step 2 Export the recorder file to your local system and proceed with the steps below based on the actual situation. After you select the target inverter:

- Click **Current RMS Recorder Export** to get the inverter fault recorder file exported to and stored in the logger.
- Click **History RMS Recorder Export** to export the data stored in the logger to your local system.
- Click **Instantaneous Value Recorder Export**, and the Data Logger can acquire the fault recorder file in the inverter.

- - End

7.8 History Data

7.8.1 Log

You can view each user's operation history, for traceback of major events, on the "Operation Log" page.

table 7-2 Log

User Type	Action	Information Recorded
All users	Login and logout	Username and user IP
System administrator	All operation logs, including but not limited to: add/delete a user, modify user information, empty users, login management, enable or disable R&D debugging.	Operating type, target object, settings made, and results

User Type	Action	Information Recorded
O&M user	Visits and key operations: • User login • System Update • Import/export for one-click migration • Certificate import	Time, type, and details of operation

step 1 Click **History Data > Operation Log** to enter the corresponding page.

step 2 View the operation log on this page. You can click  to filter the results by setting the time and operating type.

- - End

7.8.2 Fault Record

You can check the device's fault information within a certain period of time by setting the search criteria.

step 1 Click **History Data > Fault Record** to enter the corresponding page.

step 2 Set the start and end time, and click  to select the device name and fault type.

step 3 Click  to view the fault records in the set time period. The fault records mainly include the following information.

table 7-3 Description of Parameters

Parameters	Description
Time	Time of fault.
Device Name	The faulty device.
Name	Detailed description of the fault.
Type	The corresponding type of this fault.
Status	-

step 4 Click  to export the queried information to local for viewing.

- - End

7.8.3 History Curve

On this interface users can view the data records of parameters of every device in the plant by selecting the device and the parameter.

step 1 Click **History Data > History Curve** to enter the corresponding page.

step 2 Click , select the device and parameter to be viewed, and set the start and end time.

step 3 Click to view the history curve within the specified time period.

Users can select to view data records in a table or a chart. Click the icons in the following table to switch between display methods.

table 7-4 Icon explanation

Icon	Description
	Switch to table form.
	Switch to curve form.

step 4 Click to export the queried information to local for viewing.

- - End

7.9 System

7.9.1 Run Information

Click **System > Run Information** to enter the corresponding page.

The following information can be viewed:

- **General Information**

  Check information like system time, IP address, MAC address, and mobile network.

- **IO Information**

  Check information like AI voltage and current values, and DI status.

- **Forwarding Information**

  Check the current value of MODBUS-TCP and IEC104 parameters.

7.9.2 System Maintenance

7.9.2.1 System Update

Users can upgrade the Data Logger on the Web interface.

step 1 Click **System > System Maintenance** to enter the corresponding page.

step 2 Click **System Update**, select the upgrade method, and import the upgrade file following the on-screen instructions.

The upgrade file is a .zip file named "LOGGER-[Product Release Software Version]".

step 3 Click **Upgrade** on the pop-up version information window. The system enters upgrade state.

If a pop-up window indicates that the public key file is missing, you need to import the corresponding public key file for the upgrade package before proceeding with the upgrade operation. Click **System > System Maintenance > Public Key Input** to import the required public key file.

- - End

7.9.2.2 Log Export

step 1 Click **System > System Maintenance** to enter the corresponding page.

step 2 Click **Log Export** to enter the **Log Export** page.

step 3 Select the type of logs to be exported, and click **Confirm**.

- - End

7.9.2.3 Rebooting

step 1 Click **System > System Maintenance** to enter the corresponding page.

step 2 Click **Rebooting** and a warning window will pop up. Click **Confirm** to continue the rebooting operation.

- - End

7.9.2.4 One-click Migration

This function is used to back up and export some critical configuration files to the local system. It is also used to import local configuration files to the system, so as to keep its running characteristics consistent with local configuration.

step 1 Click **System > System Maintenance**.

step 2 Click **One-click Migration**, and in the pop-up **One-click Migration** window, select **Import** or **Export**, according to your actual needs.

table 7-5 Parameters description

Parameters	Description
Export	Back up the system configuration files and save them locally. You need to set a password for the zipped file when exporting. The password should meet the relevant requirements.
Import	Import local configuration files to the system. You need to enter the password for unzipping the file when importing, which is the one you set when exporting the file.

- - End

7.9.2.5 Reset All Settings

After restoring to the factory settings, when logging back into the web interface, users will be prompted to choose whether to enable network security mode.

step 1 Click **System > System Maintenance** to enter the corresponding page.

step 2 Click **Reset All Settings** to enter the **Reset All Settings** page.

step 3 A warning window will pop up, and click **Confirm** to continue the reset all settings operation.

- - End

Restoring the factory settings refers to restoring all modified settings to the factory state and will not clear the data.

7.9.2.6 Attribute Management

step 1 Click **System > System Maintenance** to enter the corresponding page.

step 2 Click **Attribute Management**.

step 3 In the pop-up dialog, select **Array Mode**.

table 7-6 Parameter description

Array Mode	Description
Conventional Mode	The array is involved in dispatching.
Sample Machine Mode	The array is not involved in dispatching.

step 4 Click Confirm.

- - End

7.9.2.7 HTTPS Certificate Import

Prerequisites

step 1 Click **System > System Maintenance**.

step 2 Click **HTTPS Certificate Import**.

step 3 In the pop-up dialog, click  to select **Certificate File** with a .crt extension, and **Private Key File** with a .key extension.

step 4 Click **Confirm**. Once the files are imported successfully, there will be a prompt about whether to restart the system.

- - End

7.9.2.8 Network Security Mode Configuration

Once network security mode is enabled, the web interface will automatically disable certain ports and display a risk message when attempting to enable them.

step 1 Click **System > System Maintenance**.

step 2 Click **Network Security Mode Configuration**.

step 3 In the pop-up dialog, choose whether to enable **Network Security Mode Configuration**.

step 4 Click **Confirm**, and the page will prompt you that the changes will take effect after a restart.

- - End

7.9.2.9 Import Public Key

To ensure the security of system upgrades and verify the authenticity and integrity of upgrade package files, a digital signature technology is employed to perform verification.

During the Data Logger upgrade process, it may be required to import the public key corresponding to the upgrade package file in order to complete the digital signature verification procedure.

step 1 Click **System > System Maintenance**.

step 2 Click **Public Key Input**.

step 3 In the popped-up dialog, select the public key file with the .pem extension.

step 4 Click **Open** to import public key file.

- - End

7.9.3 Remote Maintenance

Prerequisites

The iSolarCloud forwarding service is enabled. See 7.9.6 iSolarCloud.

step 1 Click **System > Remote Maintenance** to enter the corresponding page.

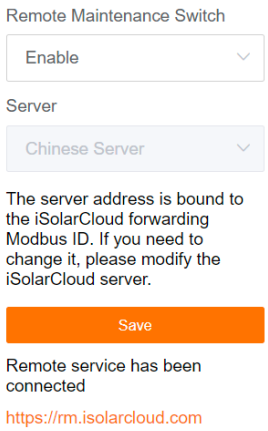


table 7-7 Parameters description

Remote maintenance switch state	Description
Disable	Cannot perform remote maintenance on the Data Logger.
Enable	Can perform remote maintenance on the Data Logger.

step 2 The **Server** is associated with the iSolarCloud forwarding Modbus ID. If you need to change it, modify the iSolarCloud server.

step 3 Click **Save** to enter the **Remote Access** page.

step 4 Enter the login password and click **Confirm**.

step 5 Access information is saved in the following two ways.

- Click **Copy Remote Access Information**, and save the access information locally after successful copying.
- Enter the email address and click **Send** to send the access information to the email address.

step 6 Enter the access link in the URL field to enter the **Remote Maintenance** page. Enter the device S/N and password, and click **Login** to perform remote maintenance.

- - End

7.9.4 Message Export

step 1 Click **System > Message Export** to enter the corresponding page.

Parameter	Description
Type	-
Work Mode	-
Port	-
Duration	Export the message recorded during the set time

step 2 After setting the parameters, click **Start** to start recording message. The recording automatically stops when the set time reaches, or the user may manually click **Stop** to stop recoding message.

step 3 Click **Export** to export the message.

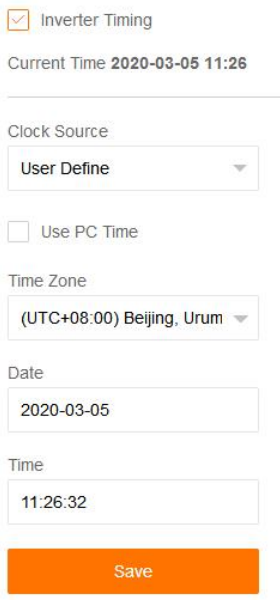
- - End

7.9.5 System Time

Check whether the current system time is correct, and allows for setting the system's current time and schedule time synchronization for inverters.

- Please confirm that the network environment of the device is secure before enabling NTP.
- It is recommended to select the **IEC104** for time synchronization, followed by **iSolarCloud**.
- Only one clock source is effective at a time.

step 1 Click **System > System Time** to enter the corresponding page.



step 2 Check **Inverter Timing** to synchronize the device time with the time of the Data Logger.

step 3 Select the clock source from the drop-down list.

Clock source	Description
User Define	The current system time and time zone can be set in the following two ways: • Check **Use PC Time** to synchronize the time of the Data Logger with the time of the PC. • Click the **Time Zone**, **Date**, and **Time**, and click**Save** to manually set the time of the Data Logger. It is recommended to select **User Define** for debugging purposes.
NTP	It allows for the synchronization of time across all devices. Select **Time Zone**. Fill in **Server**, set **Time Interval**, and click **Save**. This synchronizes the time of the Data Logger with the time of the server.
IEC104	The Data Logger and the background must use the IEC104 communication protocol. Otherwise, setting to **IEC104** is invalid.
iSolarCloud	The Data Logger must be connected to iSolarCloud. Otherwise, setting to **iSolarCloud** is invalid.

Clock source	Description
Modbus-TCP	The Data Logger and the background must use the MODBUS-TCP communication protocol. Otherwise, setting to **Modbus-TCP** is invalid.
B Code	Time synchronization using the protocol of B code.

- - End

NOTICE

The system time must be set if the SCU is used for the first time.

7.9.6 iSolarCloud

Before enabling this switch, ensure that the device is connected to a secure network.

step 1 Click **System > Transfer Configuration** to enter the corresponding page.

step 2 Click to modify the forwarding configuration information of iSolarCloud.

The default iSolarCloud server is “**Chinese Server**”. Users in mainland China select “**Chinese Server**”. Users in Europe select “**European Server**”. Users in Australia select “**Australian Server**”. Users in other regions select “**International Server**”.

To ensure the Data Logger can function properly, please complete the router whitelist settings first. For details, see Router Whitelist Settings.

- - End

7.9.7 IEC104

Configure the IEC104 forwarding service for the Data Logger on this page.

Before turning on this switch, ensure that the device is connected to a secure network.

Server Mode

In the Server Mode, the Data Logger is used a server and connected to PC server to implement data transmission and command delivery.

The local port number is 2404 when configuring IEC104 forwarding service.

7.9.7.1 White List Settings

When **Enable White List** is not selected, and the default IP address is "0.0.0.0", any background devices with valid IP address can access the Data Logger.

When **Enable White List** is selected, and specified IP address is entered, only the device with the specified IP address can access the Data Logger.

7.9.7.2 Generate Point Table

step 1 Turn on the switch of local port 2404.

step 2 Click **Generate Point Table**, and the default IEC104 point table will be automatically imported to the configuration file.

- - End

7.9.7.3 Import IEC104 Forwarding Point Table

step 1 Click  to open the **Advanced Settings** pop-up window.

step 2 Click  to import the .zip file.

step 3 Click **Save**.

- - End

7.9.7.4 Export IEC104 Forwarding Point Table

step 1 Click **System > Transfer Configuration > IEC104** to enter the **Server** page.

step 2 Click  to export the forwarding point list to the local device. The exported point list includes both .xml and .csv formats.

- - End

7.9.8 MODBUS

Configure the MODBUS forwarding service for the Data Logger on this page.

Before turning on this switch, ensure that the device is connected to a secure network.

7.9.8.1 Server Mode

In the Server Mode, the Data Logger is used a server and connected to PC server using the Modbus TCP protocol to implement data transmission and command delivery.

step 1 Click **System > Transfer Configuration > MODBUS** to enter the **Server** page.

step 2 For the white list setting, see 7.9.7.1 White List Settings.

- - End

7.9.8.2 RTU Mode

In the RTU Mode, Data Logger is connected to PC server using the Modbus TCP protocol to implement data transmission and command delivery.

step 1 Click **System > Transfer Configuration > MODBUS** to enter the **Server** page.

step 2 Click **RTU** to enter the **RTU** page.

step 3 Select **Serial Port Name**, and enter **Delay**.

step 4 Click .

- - End

7.9.8.3 Modbus TCP Fast Dispatch

Enabling Modbus TCP Fast Dispatch can enhance the responsiveness of dispatch commands.

Modbus TCP Fast Dispatch and GOOSE forwarding service cannot be enabled at the same time.

Modbus TCP only supports open-loop control.

step 1 Click **System > Transfer Configuration > MODBUS** to enter the **Server** page.

step 2 Click **Modbus TCP Fast Dispatch** to enter the corresponding page.

step 3 Set the switch to **Enable**.

step 4 Choose the device connection port and set up the network for the ETH3 and ETH4 Ethernet ports.

step 5 Select whether to enable **Northbound Communication Abnormal Protection**.

Parameter	Description
Peer IP Address	Enter the IP address of the peer device.

Parameter	Description
Port	Cannot be modified.
Communication Error Tripping Time	When the communication interruption exceeds a specified time, it will be considered as a communication anomaly.
Communication Abnormality Output	When a communication anomaly occurs, the Data Logger sends the specified dispatch output value.
Communication Error Auto Recovery Time	When a communication anomaly occurs, the Data Logger automatically triggers a self-recovery mechanism after a specific period of time.
Communication Output Recovered	After communication is restored, instruct the Data Logger to send commands to the inverters. • **Boot**: After communication is restored, the Data Logger sends a power-on command to the inverters. • **No Action**: After communication is restored, the Data Logger does not perform any operations.

step 6 Click **Save**, and the page will prompt you that the changes will take effect after a restart.

- - End

7.9.9 Third-party Portal

Configure the third-party cloud forwarding service for the Data Logger on this page.

Before enabling this switch, ensure that the device is connected to a secure network.

step 1 Click **System > Transfer Configuration > Third-party Portal** to enter the **Third-party Portal** page.

step 2 Turn on the switch.

step 3 Click to open the **Advanced Settings** dialog box.

step 4 Modify the configuration information and click **Save**.

Set the FTP path and name it as "/FTP server directory".

For example, for the name "/SUNGROW", / is the root directory, and SUNGROW is the directory where data is stored on the FTP server.

- - End

7.9.10 GOOSE

Configure the Data Logger to forward GOOSE services.

Before turning on this switch, ensure that the device is connected to a secure network.

step 1 Click **System > Transfer Configuration > GOOSE** to enter the **GOOSE** page.

step 2 Set **Switch** to **Enable**.

step 3 Click **Configuration File Export** to export and save the GOOSE data configuration file locally.

step 4 Extract the exported package, and open the .cfg file using Excel in the package. View and modify the GOOSE data configuration file.

step 5 Save the modified GOOSE data configuration file.

step 6 Click **Configuration File Import** on the operation bar, select the modified GOOSE data configuration file, and click Open to import it.

- - End

7.9.11 Port Parameter

Configure serial ports of the Data Logger.

7.9.11.1 RS485

step 1 Click **System > Port Parameter > RS485** to enter the **RS485** page.

step 2 Click to modify **Baud Rate**, **Parity Bit**, **Stop Bit**, and **PLC Access**. The default value of each parameter are as follows.

Parameter	Default value
Port Function	**Collection**
Baud Rate	9600
Parity Bit	None
Stop Bit	1
PLC Access	**Disable**
Fast Scheduling Switch	**Disable**

When the Data Logger is connected to a device via the serial port, the settings of **Baud Rate** , **Parity Bit** , and **Stop Bit** of the serial port should match those set for the connected device, to ensure normal communication.

When **PLC Access** corresponding to COM1~COM7 is set to **Enable** , the baud rates of COM1~COM7 will be automatically changed to 115200. And then MPLC node parameters can be set. See 7.9.12.1 MPLC (Broadband PLC) .

- - End

7.9.11.2 Ethernet

On this interface, users can set the Ethernet parameters.

step 1 Click **System > Port Parameter > Ethernet** to enter the **Ethernet** page.

step 2 If **Automatically Obtain IP Settings DHCP** is set to **Open**, the IP address corresponding to the port is invalid. Log in the device through the virtual IP address.

Port	Default IP address	Subnet mask	Gateway	DNS1	DNS2
ETH1	12.12.12.12	255.255.255.0	12.12.12.1	1.2.4.8	8.8.8.8
ETH2	13.13.13.13	255.255.255.0	13.13.13.1	1.2.4.8	8.8.8.8
ETH5	14.14.14.14	255.255.255.0	14.14.14.1	1.2.4.8	8.8.8.8

step 3 If the parameter Automatically obtain IP settings (DHCP) is set to **Close**, fill in the information such as the **IP Address**, **Subnet Mask**, and **Default Gateway**, and click to save the operation.

- - End

7.9.11.3 AI

step 1 Click **System > Port Parameter > AI** to enter the **AI** page.

step 2 Select **Input Type**, set **Lower Limit** and **Upper Limit**, and click to save the operation.

AI Port	Input Type	Lower Limit	Upper Limit
AI1	**Voltage**(V)	0	10
AI2	**Current**(mA)	4	20

AI Port	Input Type	Lower Limit	Upper Limit
AI3	**Current**(mA)	4	20
AI4	**Current**(mA)	4	20

step 3 Optional: If there is an external IO device connected to the Logger, click **External** to set the AI information of this device.

- - End

7.9.11.4 DI

step 1 Click **System > Port Parameter > DI** to enter the **Built-in** page.

step 2 Set **Initial Status** to **NO** or **NC**. Click to apply the changes.

step 3 Optional: If there is an external IO device connected to the Data Logger, click **External** to set the DI parameters of this device.

- - End

7.9.11.5 DO

step 1 Click **System > Port Parameter > DO** to enter the **Built-in** page.

step 2 Set **Initial Status** to **NO** or **NC**, and click to set **Function**, **Action Mode**, and **Pulse Duration**. Click to save the settings.

step 3 Optional: If there is an external IO device connected to the Data Logger, click **External** and set the DO parameters of this device.

- - End

7.9.12 MPLC

7.9.12.1 MPLC (Broadband PLC)

step 1 Click **System > MPLC** to enter the corresponding page.

step 2 Click on the operation bar to set the master and slave MPLC nodes.

step 3 Set the master node, and the following parameters should be set.

table 7-8 Parameters description

Parameters	Description
Band Num	Support Band1~Band3

Parameters	Description
Array ID	Data range: 1 ~ 255. It should be the actual number of the array to ensure that the number of each array on site is different.
Phase Value	The default is AC, with the option to select AB or BC.

It is recommended to remain default values of parameters in **Advanced Settings**.

step 4 Click **Next**.

step 5 Optional: To synchronize the parameter settings to the slave node, select the device and click **Synchronization**.

step 6 After the synchronization, click **Logout** to finish setting the MPLC parameter of the master and slave nodes.
The master and slave nodes will be automatically restarted to apply the changes.

- - End

7.9.12.2 Action

PLC Mode Upgrade

- **Local Update Package**: Use a local update package for updating.
- **Online Update Package**: Use the update package downloaded via iConfig for updating.
- **iSolarCloud Upgrade Package**: Use the update package on iSolarCloud for updating.

PLC Log Export

It is used to export PLC operation records.

7.9.13 More

step 1 Click **System > More** to enter the corresponding page.

step 2 Select state of **Auto Online** from the drop-down list: **Disable** or **Enable**.

- If set to **Enable**, parameters of string inverters developed by SUNGROW can be automatically added without additional operations on the Web.
- If set to **Disable**, the above operations are not supported.

- - End

7.9.14 About

Click **About** to enter the **About** page.
Information such as firmware information of the Data Logger can be viewed.

Users can scan the QR code via the iSolarCloud App to add the Data Logger.

8 Grid Dispatching Function

8.1 Function Description

The Data Logger is equipped with a power control module. The module is used to receive control commands from the grid dispatch center and send the control commands to the monitored inverter through the RS485 port. This allows for the control of various parameters such as active power, reactive power, and power factor, and the ability to start or stop the inverter.

8.2 Power Control

Power regulation includes active power control and reactive power regulation.

8.2.1 Active Power

8.2.1.1 Disable Derating

When **Disable Derating** is selected, the inverter operates at full load.

step 1 Click **Power Control > Active Power** to enter the **Active Power** page.

step 2 Set **Active Control Mode** to **Disable Derating**, and click **Save**.

- - End

8.2.1.2 Remote Power Control

When the command is issued through IEC104 or MODBUS TCP protocol, set **Active Control Mode** to **Remote Power Control**.

step 1 Click **Power Control > Active Power** to enter the **Active Power** page.

step 2 Set **Active Control Mode** to **Remote Power Control**.

step 3 Set remote dispatching parameters. For specific parameter description, refer to the following table.

table 8-1 Parameters description

Parameters	Description
Control Method	• **Open-Loop Control**: Active dispatching command is sent to the power output port of the inverter, thereby achieving active power control. • **Closed-Loop Control**: - When not using a Smart Energy Meter, at the start time, the active power command is set as the target value. Multiple adjustment algorithms are applied to calculate the proportional value of active power compensation, which is then sent to the power output port of the inverter. This method is generally used for fast and accurate active power regulation. - When using a Smart Energy Meter, at the start time, the active power command is set as the target value, and the active power is collected by the meter as an input parameter. A closed-loop control algorithm is then used to calculate the proportional value of active power compensation, which is then sent to the power output port of the inverter. This method is generally used for anti-backflow or zero power feed-in.
Northbound Communication Abnormal Protection	When there is a problem with the connection between the logger and the dispatching equipment or server, the inverter may be uncontrolled and impact the grid. If this function is enabled, set to limit the inverter power or shut down the inverter to achieve protection.
Query Recovery Time	The Data Logger receives the remote scheduling command and will stop querying data during this time period. Range: 0~60s
Frame Delay	Time interval for data interaction with the inverter while executing the power control function. Range: 4~70ms
Target Value Filter	It can be set to “Identical Values”, “Change Rate≤0.5%Pn”, or “Do Not Filter”.
Filter Time	Set according to actual conditions.
Select Energy Meter or Transformer*	Select a Smart Energy Meter or transformer for power regulation
Control Cycle*	Time interval of delivering dispatching commands Range: 5~60s

Parameters	Description
Error Limit**	Adjust accuracy. If the ratio of the difference between the active power and the target value to the rated power is within the set error range, the target value is reached.
Adjustment Ratio**	If the adjustment does not reach the set target value, increase or decrease adjustment value according to the set adjustment ratio, so as to reach the target value.

The parameters noted with * refer to the parameters that need to be set only when **Control Method** is set to **Closed-Loop Control**.

The parameters noted with ** refer to the parameters that need to be set only when **Control Method** is set to **Closed-Loop Control**, and a Smart Energy Meter or transformer is selected.

step 4 After finishing parameter setting, click **Save** to save the operation.

- - End

8.2.1.3 Local Power Control

If reactive dispatching command or dispatching target value is used as dispatching input locally, set **Active Control Mode** to **Local Power Control**.

step 1 Click **Power Control > Active Power** to enter the **Active Power** page.

step 2 Set **Active Control Mode** to **Local Power Control**.

step 3 Set local dispatching parameters. For specific parameter description, refer to the following table.

table 8-2 Parameters description

Parameters	Description
Control Method	• **Open-Loop Control**: Active dispatching command is sent to the power output port of the inverter, thereby achieving active power control. • **Closed-Loop Control**: - When not using a Smart Energy Meter, at the start time, the active power command is set as the target value. Multiple adjustment algorithms are applied to calculate the proportional value of active power compensation, which is then sent to the power output port of the inverter. This method is generally used for fast and accurate active power regulation. - When using a Smart Energy Meter, at the start time, the active power command is set as the target value, and the active power is collected by the meter as an input parameter. A closed-loop control algorithm is then used to calculate the proportional value of active power compensation, which is then sent to the power output port of the inverter. This method is generally used for anti-backflow or zero power feed-in.
Select Meter*	Select a Smart Energy Meter for power regulation
Communication Abnormality Output**	When the communication is abnormal, the specified dispatch output value is delivered.
Wiring Mode**	**Direct Connection**: One Data Logger is connected to all inverters, where all the inverters must be string inverters or central inverters. **Cascading**: Multiple Data Loggers are cascaded, and this Data Logger is used as the host.
Start After Communication Recovery**	**Enable**: After the Smart Energy Meter recovers normal communication, the Data Logger will deliver a start command to the inverter. **Disable**: After the Smart Energy Meter recovers normal communication, the Data Logger will not deliver a start command to the inverter.
Start Delay After Communication Recovery**	After the Smart Energy Meter recovers normal communication, the Data Logger will deliver a start command to the inverter after a certain time period. Range: 0~120s

Parameters	Description
Feed-in Stop**	• **Enable**: When feed-in power is detected, the Data Logger will deliver a stop command to the inverter. • **Disable**: When feed-in power is detected, the Data Logger will not deliver stop instruction to the inverter. Note: Use the enable switch with caution. In general, keep it in the disabled state unless necessary.
Control Cycle	Time interval of delivering dispatching commands Range: 5~60s
Instruction Type	**kW**: set active power value **%**: set active power percentage

The parameters noted with * refer to the parameters that need to be set only when **Control Method** is set to **Closed-Loop Control**.

The parameters noted with ** refer to the parameters that need to be set only when **Control Method** is set to **Closed-Loop Control**, and a Smart Energy Meter or transformer is selected.

step 4 Add local power control manner.

Fill in the **Time**, and **Fixed Value of Active Power** or **Percentage**, and click **Save**.

- - End

Subsequent Operation

Delete local power control manner: select a local control manner that needs to be deleted, and click **Clear Data**.

8.2.1.4 Analog Input

When using the analog signal at the AI port of the Data Logger as the dispatching input, set **Active Control Mode** to **Analog Input**.

step 1 Click **Power Control > Active Power** to enter the **Active Power** page.

step 2 Set **Active Control Mode** to **Analog Input**.

step 3 Set AI control parameters. For specific parameter description, refer to the following table.

table 8-3 Parameters description

Parameters	Description
Control Method	• **Open-Loop Control**: Active dispatching command is sent to the power output port of the inverter, thereby achieving active power control. • **Closed-Loop Control**: - When not using a Smart Energy Meter, at the start time, the active power command is set as the target value. Multiple adjustment algorithms are applied to calculate the proportional value of active power compensation, which is then sent to the power output port of the inverter. This method is generally used for fast and accurate active power regulation. - When using a Smart Energy Meter, at the start time, the active power command is set as the target value, and the active power is collected by the meter as an input parameter. A closed-loop control algorithm is then used to calculate the proportional value of active power compensation, which is then sent to the power output port of the inverter. This method is generally used for anti-backflow or zero power feed-in.
Select Meter*	Select a Smart Energy Meter for power regulation
Control Cycle	Time interval of delivering dispatching commands Range: 5~60s
AI Port	AI1~AI4 available
Instruction Type	**kW**: set active power value **%**: set active power percentage
Min/Max	When **Instruction Type** is set to **%**, the lower and upper limit is 0.0%~100.0%. When **Instruction Type** is set to **kW**, the lower and upper limit is 0.0 kW~999999 kW.
Step	The minimum difference value between two consecutive power dispatching commands

The parameters noted with * refer to the parameters that need to be set only when **Control Method** is set to **Closed-Loop Control**.

step 4 After finishing the configuration, click **Save** to apply the changes.

- - End

8.2.1.5 Digital Input

When using the analog signal at the DI port of the Data Logger as the dispatching input, set **Active Control Mode** to **Digital Input**.

step 1 Click **Power Control > Active Power** to enter the **Active Power** page.

step 2 Set **Active Control Mode** to **Digital Input**.

step 3 Set DI control parameters. For specific parameter description, refer to the following table.

table 8-4 Parameters description

Parameters	Description
Control Method	• **Open-Loop Control**: Active dispatching command is sent to the power output port of the inverter, thereby achieving active power control. • **Closed-Loop Control**: - When not using a Smart Energy Meter, at the start time, the active power command is set as the target value. Multiple adjustment algorithms are applied to calculate the proportional value of active power compensation, which is then sent to the power output port of the inverter. This method is generally used for fast and accurate active power regulation. - When using a Smart Energy Meter, at the start time, the active power command is set as the target value, and the active power is collected by the meter as an input parameter. A closed-loop control algorithm is then used to calculate the proportional value of active power compensation, which is then sent to the power output port of the inverter. This method is generally used for anti-backflow or zero power feed-in.
Select Meter*	Select a Smart Energy Meter for power regulation
Control Cycle	Time interval of delivering dispatching commands Range: 5~60s
Instruction Type	**kW**: set active power value **%**: set active power percentage

The parameters noted with * refer to the parameters that need to be set only when **Control Method** is set to **Closed-Loop Control**.

step 4 Add digital input manner.

Select the desired **DI Port**, fill in the **Fixed Value of Active Power** or **Percentage**, and click **Save**.

- - End

Subsequent Operation

Delete digital input manner: select a digital input manner that needs to be deleted, and click **Clear Data**.

8.2.1.6 Country Mode

If the dispatching input must be the national power dispatching commands, set **Active Control Mode** to **Country Mode**.

step 1 Click **Power Control > Active Power** to enter the **Active Power** page.

step 2 Set **Active Control Mode** to **Country Mode**.

step 3 Select **Country**.

When the country is set to **Korea**, the corresponding parameter description is as follows.

table 8-5 Parameters description

Parameters	Description
PPC Type	PPC device of DER-AVM type
Forwarding Modbus ID	From 1 to 10

When the country is set to **Japan**, the corresponding parameter description is as follows.

table 8-6 Parameters description

Parameters	Description
Scheduling Mode	Data Logger is connected to the power plant dispatch server designated by the Japan Electric Power Company.
Obtaining Schedule	• When it is set to **Remote Download**, fill in plant code and server address. And import certificate, to download schedule from the set server address. • When it is set to **Local Import**, just import the schedule file.

Parameters	Description
Parameter Type	• When selecting **Plant Parameter**, set **Plant Information** and **PV Module Capacity** further. • When selecting **Device Parameter**, click **Detailed Device Parameter** to view and set device information.
Time Calibration	Calibrate the time as needed. Calibration range: -10~10. When the system time of Data Logger < the time adjusted after **Time Calibration**, or the time of Data Logger < the NTP synchronized time, **Time Validity** will be displayed as Invalid, at which time Data Logger will send a stop command to the inverter, until **Time Calibration** or NTP synchronization operation is performed.

When the country is set to **China**, the value for **Scheduling Mode** is set to **DC Energy Storage** by default.

step 4 Click **Save**.

- - End

8.2.1.7 Disable Dispatching

Set **Active Control Mode** to **Disable Dispatching** to prohibit the Data Logger from performing reactive dispatching on the inverter.

step 1 Click **Power Control > Active Power** to enter the **Active Power** page.

step 2 Set **Active Control Mode** to **Disable Dispatching**, and click **Save**.

- - End

8.2.2 Reactive Power

8.2.2.1 Disable Output

If the grid company does not need the power plant to adjust the voltage at the grid-connection point, and the inverter does not need to cooperate with the grid for reactive power compensation, the inverter keeps operating in the reactive-forbidden output state, and the **Reactive Control Mode** is set to **Disable Output**.

step 1 Click **Power Control > Reactive Power** to enter the **Reactive Power** page.

step 2 Set **Reactive Control Mode** to **Disable Output**, and click **Save**.

- - End

8.2.2.2 Remote Power Control

When the command is issued through IEC104 or MODBUS TCP protocol, set **Reactive Control Mode** to **Remote Power Control**.

step 1 Click **Power Control > Reactive Power** to enter the **Reactive Power** page.

step 2 Set **Reactive Control Mode** to **Remote Power Control**.

step 3 Set remote dispatching parameters.

table 8-7 Parameters description

Parameters	Description
Control Method	• **Open-Loop Control**: At the start time, the reactive power command is sent to the power output port of the inverter for reactive power control. • **Closed-Loop Control**: At the start time, the reactive power command is set as the target value, and the reactive power and power factor are collected by the meter as input parameters. A closed-loop control algorithm is then used to calculate the proportional value of reactive power compensation, which is then sent to the power output port of the inverter. This method is generally used to improve the power factor of the property boundary point.
Query Recovery Time	The Data Logger receives the remote scheduling command and will stop querying data during this time period. Range: 0~60s
Frame Delay	Time interval for data interaction with the inverter while executing the power control function. Range: 4~70ms
Target Value Filter	It can be set to “Identical Values”, “Change Rate≤0.5%Pn”, or “Do Not Filter”.
Filter Time	Set according to actual conditions.
Select Energy Meter or Transformer*	Select a Smart Energy Meter or transformer for power regulation
Error Limit*	Adjust accuracy. If the ratio of the difference between the reactive power and the target value to the rated power is within the set error range, the target value is reached.
Adjustment Ratio*	If the adjustment does not reach the set target value, increase or decrease adjustment value according to the set adjustment ratio, so as to reach the target value.

Parameters	Description
Reactive Power Direction*	**Forward Direction**: The reactive power direction of the inverter array displayed by the meter/transformer is the same as the actual reactive power direction. **Direction Reverse**: The reactive power direction of the inverter array displayed by the meter/transformer is opposite to the actual reactive power direction.
Control Cycle	Time interval of delivering dispatching commands Range: 5~60s

The parameters noted with * refer to the parameters that need to be set only when **Control Method** is set to **Closed-Loop Control**.

step 4 After finishing the configuration, click **Save** to apply the changes.

- - End

8.2.2.3 Local Power Control

If reactive dispatching command or dispatching target value is used as dispatching input locally, set **Reactive Control Mode** to **Local Power Control**.

step 1 Click **Power Control > Reactive Power** to enter the **Reactive Power** page.

step 2 Set **Reactive Control Mode** to **Local Power Control**.

step 3 Set local dispatching parameters.

table 8-8 Parameters description

Parameters	Description
Control Method	• **Open-Loop Control**: At the start time, the reactive power command is sent to the power output port of the inverter for reactive power control. • **Closed-Loop Control**: At the start time, the reactive power command is set as the target value, and the reactive power and power factor are collected by the meter as input parameters. A closed-loop control algorithm is then used to calculate the proportional value of reactive power compensation, which is then sent to the power output port of the inverter. This method is generally used to improve the power factor of the property boundary point.
Select Meter*	Select a Smart Energy Meter for power regulation

Parameters	Description
Wiring Mode*	**Direct Connection**: One Data Logger is connected to all inverters, where all the inverters must be string inverters or central inverters. **Cascading**: Multiple Data Loggers are cascaded, and this Data Logger is used as the host.
Line Reactive Power Compensation*	Compensation for reactive power losses in the line.
Control Cycle*	Time interval of delivering dispatching commands Range: 5~60s
Instruction Type	**PF**: set the power factor as the target value **%**: set reactive power percentage

The parameters noted with * refer to the parameters that need to be set only when **Control Method** is set to **Closed-Loop Control**.

When selecting an energy meter, the meter must be the one manufactured by SUNGROW.

step 4 Add local power control manner.

Fill in **Time** and **PF** or **Percentage**, and click **Save**.

- - End

Subsequent Operation

Delete local power control manner: select a local control manner that needs to be deleted, and click **Clear Data**.

8.2.2.4 Analog Input

When using the analog signal at the AI port of the Data Logger as the dispatching input, set **Reactive Control Mode** to **Analog Input**.

step 1 Click **Power Control > Reactive Power** to enter the **Reactive Power** page.

step 2 Set **Reactive Control Mode** to **Analog Input**.

step 3 Set AI control parameters.

table 8-9 Parameters description

Parameters	Description
Control Method	• **Open-Loop Control**: At the start time, the reactive power command is sent to the power output port of the inverter for reactive power control. • **Closed-Loop Control**: At the start time, the reactive power command is set as the target value, and the reactive power and power factor are collected by the meter as input parameters. A closed-loop control algorithm is then used to calculate the proportional value of reactive power compensation, which is then sent to the power output port of the inverter. This method is generally used to improve the power factor of the property boundary point.
Select Meter*	Select a Smart Energy Meter for power regulation
Control Cycle*	Time interval of delivering dispatching commands Range: 5~60s
AI Port	AI1~AI4 available
Instruction Type	**PF**: set the power factor as the target value **%**: set reactive power percentage
Min/Max	When **Instruction Type** is set to **%**, the lower and upper limit is -100.0%~100.0%. When **Instruction Type** is set to **PF**, the lower and upper limit is -1~-0.8 or 0.8~1
Step	The minimum difference value between two consecutive power dispatching commands
Hysteresis Range**	When **Instruction Type** is set to **PF**, dispatching output maintains a power factor within the range of ±1.

The parameters noted with * refer to the parameters that need to be set only when **Control Method** is set to **Closed-Loop Control**.

Only when **Control Method is set to **Open-Loop Control** and **Instruction Type** to **PF** or when **Control Method** is set to **Closed-Loop Control**, a Smart Energy Meter is selected, and the **Instruction Type** is set to **PF**, the parameter **Hysteresis Range** is settable.

step 4 After finishing the configuration, click **Save** to apply the changes.

- - End

8.2.2.5 Digital Input

When using the analog signal at the DI port of the Data Logger as the dispatching input, set **Reactive Control Mode** to **Digital Input**.

step 1 Click **Power Control > Reactive Power** to enter the **Reactive Power** page.

step 2 Set **Reactive Control Mode** to **Digital Input**.

step 3 Set DI control parameters.

table 8-10 Parameters description

Parameters	Description
Control Method	• **Open-Loop Control**: At the start time, the reactive power command is sent to the power output port of the inverter for reactive power control. • **Closed-Loop Control**: At the start time, the reactive power command is set as the target value, and the reactive power and power factor are collected by the meter as input parameters. A closed-loop control algorithm is then used to calculate the proportional value of reactive power compensation, which is then sent to the power output port of the inverter. This method is generally used to improve the power factor of the property boundary point.
Select Meter*	Select a Smart Energy Meter for power regulation
Control Cycle*	Time interval of delivering dispatching commands Range: 5~60s
Instruction Type	**PF**: set the power factor as the target value **%**: set reactive power percentage

The parameters noted with * refer to the parameters that need to be set only when **Control Method** is set to **Closed-Loop Control**.

Open-Loop Control can set **PF**, and **Closed-Loop Control** can only set **PF** when a meter or transformer is selected.

step 4 Add digital input manner.

Select the desired **DI Port**, fill in the **PF** or **Percentage**, and click **Save**.

- - End

Subsequent Operation

Delete digital input manner: select a digital input manner that needs to be deleted, and click **Clear Data**.

8.2.2.6 Country Mode

If the dispatching input must be the national power dispatching commands, set **Reactive Control Mode** to **Country Mode**.

step 1 Click **Power Control > Reactive Power** to enter the **Reactive Power** page.

step 2 Set **Reactive Control Mode** to **Country Mode**.

step 3 Set **Country** and **PPC Type**, enter **Forwarding Modbus ID**, and click **Save**.

- - End

8.2.2.7 Disable Dispatching

Prohibit the Data Logger from performing reactive dispatching on the inverter.

step 1 Click **Power Control > Reactive Power** to enter the **Reactive Power** page.

step 2 Set **Reactive Control Mode** to **Disable Dispatching**, and click **Save**.

- - End

8.3 Emergency Button

To perform a batch shutdown for inverters, select **Emergency Button**.

Click **Power Control > Emergency Button** to enter the **Emergency Button** page.

Parameters	Description
Emergency Button	**Enable**: When the emergency stop switch is turned on, the inverters will be collectively restored and powered on. **Disable**: When the emergency stop switch is turned off, this function remains inactive.
DI Port	Associated with DI9~DI16 channel
Inverter Status During Emergency Stop Recovery	**Boot**: When the emergency stop is deactivated, the inverters are powered on in batch. **Shutdown**: When the emergency stop is deactivated, the inverters are in a powered-off state.

9 System Management

The administrator can assign different accounts and permissions to different users. This helps to improve the system's security, operation efficiency for users, and lowers management costs.

table 9-1 Default User Type

User Type	Username	Password
O&M user	maintain	pw@111111
System administrator	administrator	pw@111111
R&D user	develop	No default password

It is recommended to change the password after initial login.

User Management

The R&D user role is available only for SUNGROW technical support personnel.

- The system administrator can assign up to 5 user accounts.
- Only one user is allowed to log in at the same time.
- When adding a user, the user name should not be longer than 16 characters. The password should be 8-32 character long and contain at least three of the following four character types: uppercase letters, lowercase letters, numbers, and special characters.

- If the Network Security Mode is not turned on, the passwords of all users are permanently valid.
- Under Network Security Mode, the system administrator can set passwords to expire after a number of days between 1 and 90 for different types of users.

Login Management

table 9-2 Login management settings

Parameters	Default value	Range	Configuration Description
Number of Illegal Visits	6	3-6	Users will be verified for illegal visits when logging in. The user will be locked out if the number of illegal visits exceeds the preset value. This parameter will be reset after 24 hours.
Login Timeout	10 minutes	10-30 minutes	If the user does not take any actions during the preset time period after logging in, there will be a prompt about session timeout, and the user will go back to the login page.
User Lock Time	10 minutes	10-30 minutes	The period of time during which the user remains locked out for illegal visits.

R&D Management

Before R&D users can log in to the web interface, the system administrator must enable **R&D Debugging**. The switch will automatically turn off after being continuously enabled for 24 hours. By default, the switch is in the disable state.

Link Account

The system administrator account must be associated with an email or phone number. In case of a forgotten password, reset it by verifying the account through either a phone number or email address.

Account association using a mobile phone number is supported only when the web interface language is set to Chinese.

10 Routine Maintenance

Due to ambient temperature, humidity, dust, and vibration, the internal components of the Data Logger may age and wear, which may lead to potential failures inside the device. Therefore, it is necessary to perform daily and regular maintenance on the Data Logger to ensure its normal operation and service life.

All measures, which can help the Data Logger to keep good working conditions, are within the maintenance scope.

10.1 Safety Instructions

⚠ WARNING

Only qualified and authorized personnel may perform maintenance and other operations on the Data Logger.

Do not leave screws, washers or other metal parts in the Data Logger during maintenance. Otherwise, damage may be caused to the device!

⚠ WARNING

After the Data Logger stops running, wait at least 5 minutes before performing any operation on it.

Five Safety Rules

The following five safety rules shall be observed during maintenance or troubleshooting of the Data Logger to ensure operators' safety:

- Disconnect the Data Logger from all external connections and internal power supplies.
- Ensure that the Data Logger will not be inadvertently connected.
- Ensure that the Data Logger is voltage-free using a multimeter.
- Connect necessary grounding cables.
- If there are parts in the operation area that may carry voltage, cover them with insulated cloth for insulation shielding.

10.2 Maintenance List

Item	Method
Working environment	• Ensure that there are no devices emitting strong electromagnetic interference near the Data Logger. • Ensure that there are no heat sources near the Data Logger. • Ensure that there are no corrosive materials present near the Data Logger.
Hardware	• Ensure that the power supply voltage is within the normal range. • Ensure that the wiring connections are secure and reliable. • Ensure that the device is properly grounded.
System cleaning	• Ensure that the enclosure, circuit board and other components are clean. • Check for dust or obstructions in the ventilation holes.
Terminal and cable connection	• Check whether the screws of control terminals are loose. Tighten them with a screwdriver if necessary. • Check whether the copper bars or screws are oxidized and discolored. • Visually inspect the connections and distribution of terminals and cables.
Software	• Log in to the web interface to check the device's communication status. • Log in to the web interface to review and adjust the parameters of the Data Logger. • Log in to the web interface to check the software version of the Data Logger.

11 Troubleshooting

11.1 Safety Instructions

DANGER

Before proceeding with any troubleshooting, ensure that the grounding cable is properly grounded. Failure to do so may result in a severe electric shock hazard for the operators.

11.2 Common Faults and Corrective Measures

The following table shows common faults and corresponding corrective measures. If the fault still persists after you perform the corrective measures as described in this manual, contact SUNGROW with the following information provided:

- Serial number of the Data Logger, date of manufacture, and software version
- Serial number of the Data Logger, date of manufacture, and software version
- Fault information and a brief description of the fault
- Pictures of the fault occurrence site (if on-site conditions permit)

Fault	Possible Cause	Corrective measure
Failure to log into the Web	Cable connection between the PC and the Data Logger is abnormal.	Check whether the PC is normally connected to the port ETH of the Data Logger.
	PC network signal is abnormal.	Check whether the network signal icon of the PC is abnormal.
	IP address of the PC is incorrect.	Manually set the IP address of the PC network port to be in the same network range as the IP address of the Data Logger.
	The PC cannot normally receive data.	Use the shortcut key **Win+R** to call up the command prompt. Input **ping 12.12.12.12** (IP address of the Data Logger) to check whether the PC can receive data packets.

Fault	Possible Cause	Corrective measure
	Conflicts with the network card, antivirus software, or other factors.	If PC cannot receive data packets, disable any other network cards, antivirus software, or firewalls, and then retry the operation.
Communication failure between the Data Logger and devices connected to it	The RS485 cable connecting the device and the Data Logger is abnormal.	Inspect the RS485 communication cable between the device and the Data Logger for any short circuits, open circuits, or reverse connections between RS485-A and RS485-B.
	Configuration of the serial port is inconsistent with the RS485 parameters of the device.	Log into the Web, and on the **System > Port Parameter > RS485** page, verify whether the port configuration is consistent with the RS485 parameters of the device.
	The current device is an inverter, and the inverter cannot be added to the Web system in automatic search manner.	Manually input the inverter address to add the inverter to the Web system.
	Communication connection status between the Data Logger and the device is abnormal.	Log into the Web, and on the **Device Monitoring** page, verify whether the communication status is normal. If there is an abnormality, check for duplicate addresses on the same port. If the fault persists, contact SUNGROW Customer Service.
No data exchange between the and background via ModbusRTU	The RS485 cable connecting the device and the Data Logger is abnormal.	Inspect the RS485 communication cable between the device and the Data Logger for any short circuits, open circuits, or reverse connections between RS485-A and RS485-B.

Fault	Possible Cause	Corrective measure
	COM port parameter is incorrectly set on the web interface.	Log into the Web, and on the **System > Port Parameter > MODBUS > RTU** page, verify whether the COM port is set to **Forwarding is Prohibited**. Check whether the serial port parameter is correct.
	Collection address of the device does not match with access address.	On the **Device > Device List** page, verify if it is consistent with **Forwarding Modbus ID**.
	Protocol configuration of the background is inconsistent with that of the device.	Ensure that the protocol configuration of the background is consistent with that of the device.
No data exchange between the and background via ModbusTCP	Network connection between the Data Logger and background is incorrect.	Verify the network connection between the Data Logger and the background to ensure it is configured correctly.
	Configuration of port ETH of the Data Logger is incorrect.	Set the IP address of the port ETH of the Data Logger to the one that the background needs to access.
	Collection address of the device does not match with forwarding address.	On the **Device > Device List** page, verify if it is consistent with **Forwarding Modbus ID**.
	Protocol configuration of the background is inconsistent with that of the device.	Ensure that the protocol configuration of the background is consistent with that of the device.
No data exchange between the and background via IEC104	Network connection between the Data Logger and background is incorrect.	Verify the network connection between the Data Logger and the background to ensure it is configured correctly.

Fault	Possible Cause	Corrective measure
	IP address of the forwarding device or background IP address is incorrect.	Log into the Web, and on the **System > Port Parameter > IEC104** page, click **White List Setting** to verify whether whitelist is enabled. If enabled, only IP addresses of white list setting are allowed to access the Data Logger.
	The communication device is abnormal.	Verify if there are any abnormalities in the device communication.
	Background parameters are incorrectly configured.	Ensure that the background parameters are correctly configured.
No data exchange between the and iSolarCloud	System time of the Data Logger is incorrect.	Log into the Web, and on the **System > System Time** page, verify whether the time is correct.
	Configuration of port ETH is incorrect.	Users access the Internet via the port ETH.
	Communication between the and devices like inverter and combiner box is abnormal.	Check whether the communication between the Data Logger and devices like inverter and combiner box is abnormal.
Remote inverter upgrading failed	The current inverter does not support remote upgrading function, or the upgrading file is inconsistent with the actual device type.	Ensure that the current inverter supports the remote upgrading function, and the sgu file is consistent with the actual device type.
	The upgrading file is invalid.	The upgrading file is invalid, for example, the file is encrypted or the file is named incorrectly.
	The type of to-be-upgraded inverter is inconsistent with the upgrading file.	Check whether the type of to-be-upgraded inverter is consistent with the upgrading file.

Fault	Possible Cause	Corrective measure
	Communication connection is abnormal.	Check whether the communication cable is correctly connected, and try to upgrade the inverter again if so. If the fault persists, contact SUNGROW Customer Service.
Remote parameter setting failed	Communication connection is abnormal.	Log into the Web, and verify whether the communication status is normal on the **Device Monitoring** page.
	The current operation mode of the inverter does not support the parameter setting.	Identify the current operation status of the inverter. For example, the active power rising speed and drop speed can be set only when the speed control switch of the inverter is enabled.
The fast dispatch instruction in Goose messages is not issued to the inverter when an external communication module is connected	**Fast Scheduling Switch** is disabled.	• Log into the Web. • Click **System > Port Parameter > RS485**, and click , to set **Fast Scheduling Switch** to **Enable**.
	No inverter is added to the MPLC port.	• Log into the Web. • Click **Device > Device List > Add Device**. • Click the function column of corresponding DO and select **Communication Control**.
104 background cannot remotely control DO	DO control type is not configured as "**Communication Control**"	• Log into the Web. • Click **System > Port Parameter > DO**, and click the function column of corresponding DO and select **Communication Control**.

12 FAQ

How many types of communication ports does the Data Logger support, what are the corresponding ports, and how to set the port parameters?

Type	Port name	Default values
Ethernet	ETH1, ETH2 and ETH5	For default parameters, see7.9.11.2 Ethernet
RS485	A1B1~A7B7	Baud rate: 9600, Check bit: Null, Data bit: 8, Stop bit: 1.
MPLC	L1, L2, L3	Baud rate: 115200, Check bit: Null, Data bit: 8, Stop bit: 1.

What are the forwarding protocols supported by the Data Logger?

Protocol Type	Description
ModbusRTU/ModbusTCP	The Data Logger sends the collected data of devices (such as inverter, combiner box, Meteo Station) to the background. The background allocates forwarding addresses to these devices, thereby accessing and obtaining the data of the devices.
IEC104	1. Add or search devices on the Web interface (such as inverter, combiner box, Meteo Station). 2. Export the IEC104 point table on **System > Transfer Configuration > IEC104** page. The point table shows measuring point information of devices.
FTP	The Data Logger transfers the data of the collected equipment (such as inverter, PV combiner box, Meteo Station, etc.) to the remote monitoring system through the FTP protocol.
MQTT	The Data Logger transfers the data collected from devices (such as inverters, PV combiner box, Meteo Station, etc.) to the remote monitoring system through the MQTT protocol.

How to log into the system via R&D account and how to obtain the password?

Generally, the O&M users have access to most of onsite configurations. If there is any needs to use the R&D account, contact SUNGROW to obtain a temporary password which is valid only as of this day.

How to connect multiple Data Loggers to the background through the network?

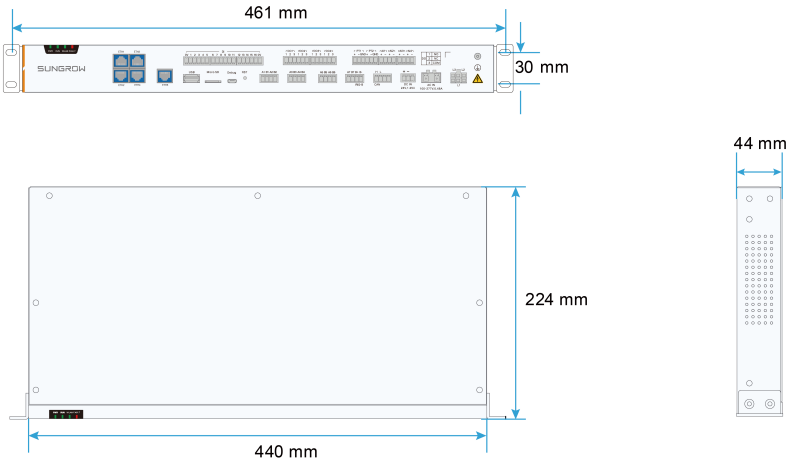
1. Data Loggers closer to the Ethernet switch (< 100m) are connected to the Ethernet switch by using network cables.
2. Data Loggers relatively far away from the Ethernet switch (> 100m) are connected to the Ethernet switch by using routed fiber optic cables.
3. Once the connection is established, it is important to set the IP addresses of multiple Data Loggers to the same network segment, ensuring that there are no duplicate IP addresses assigned.

13 Appendix A: Technical Data

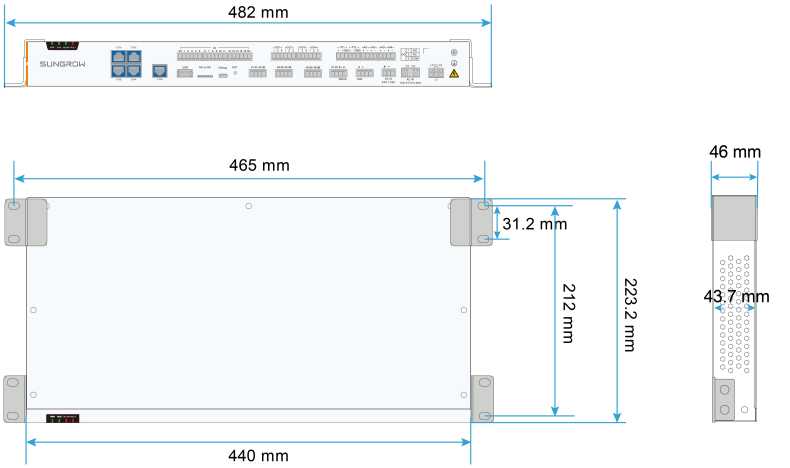
Communication	
Inverter communication	RS485, MPLC
PC communication	10 / 100 Mbps Ethernet / RS485
Max. Communication Range	
RS485	1000m
Ethernet	100m
MPLC*	1000m
Communication Ports	
RS485	7
Ethernet	5 × 10/100Mbps ETH1/2/5 Ethernet port ETH3/4 Fast dispatch port
Digital input	16
Digital output	4
Built-in MPLC	1
PT100/PT1000	2
Analog input	4 (AI1：0~10 Vdc，AI2~AI4：4~20 mA)
Power Supply	
AC input	100V~277Vac, 50 / 60Hz
DC input	24Vdc, 1.25A
Power consumption	• Typ. 18W • Max. 30W
Environment	
Operating temperature	- 30°C~+60°C
Storage temperature	-40°C~+70°C
Operating humidity	≤ 95%, no condensation
Elevation	≤4000m
IP rating	IP20
Mechanical Parameters	
Dimensions (W x H x D)	440×44×224mm
Weight	3 kg
Installation	Rack-mounting, wall mounting

14 Appendix B: Related Drawings

Rack-mounted Drawings



Wall-Mounted Drawings



15 Appendix C: General Information

15.1 Quality Assurance

Evidence

During the warranty period, the customer shall provide the product purchase invoice and date. In addition, the trademark on the product shall be undamaged and legible. Otherwise, SUNGROW has the right to refuse to honor the quality guarantee.

Conditions

- When product faults occur during the warranty period, SUNGROW will provide free repairs or replace the product with a new one.
- After replacement, unqualified products shall be processed by SUNGROW.
- The customer shall give SUNGROW a reasonable period to repair the faulty device.

In the following circumstances, SUNGROW has the right to refuse to honor the quality guarantee:

- The equipment is damaged during transportation.
- The equipment is improperly installed.
- The equipment is improperly modified.
- The equipment is improperly used.
- The equipment operates under harsh conditions beyond those described in this document.
- The equipment is damaged by an abnormal natural environment.

15.2 Contact Information

If you have any questions about this product, please reach out to us. In order to be more responsive and provide you with better service, please offer the following information:

- Model of the device
- Serial number of the device
- Fault code/name
- Brief description of the problem

HQ Tel: 0551 - 6532 7878 / 0551 - 6532 7877

For detailed information, see **https://www.sungrowpower.com/headquarter.html** .

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www.sungrowpower.com

M-D-000287